

**02 INFORMATION ABOUT PRINCIPAL INVESTIGATORS/PROJECT DIRECTORS(PI/PD) and
co-PRINCIPAL INVESTIGATORS/co-PROJECT DIRECTORS**

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PI/PD Name: Krzysztof W Janowicz

Gender: Male Female
Ethnicity: (Choose one response) Hispanic or Latino Not Hispanic or Latino

Race:
(Select one or more)
 American Indian or Alaska Native
 Asian
 Black or African American
 Native Hawaiian or Other Pacific Islander
 White

Disability Status:
(Select one or more)
 Hearing Impairment
 Visual Impairment
 Mobility/Orthopedic Impairment
 Other
 None

Citizenship: (Choose one) U.S. Citizen Permanent Resident Other non-U.S. Citizen

Check here if you do not wish to provide any or all of the above information (excluding PI/PD name):

REQUIRED: Check here if you are currently serving (or have previously served) as a PI, co-PI or PD on any federally funded project

Ethnicity Definition:

Hispanic or Latino. A person of Mexican, Puerto Rican, Cuban, South or Central American, or other Spanish culture or origin, regardless of race.

Race Definitions:

American Indian or Alaska Native. A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.

Asian. A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

Black or African American. A person having origins in any of the black racial groups of Africa.

Native Hawaiian or Other Pacific Islander. A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

White. A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

WHY THIS INFORMATION IS BEING REQUESTED:

The Federal Government has a continuing commitment to monitor the operation of its review and award processes to identify and address any inequities based on gender, race, ethnicity, or disability of its proposed PIs/PDs. To gather information needed for this important task, the proposer should submit a single copy of this form for each identified PI/PD with each proposal. Submission of the requested information is voluntary and will not affect the organization's eligibility for an award. However, information not submitted will seriously undermine the statistical validity, and therefore the usefulness, of information received from others. Any individual not wishing to submit some or all the information should check the box provided for this purpose. (The exceptions are the PI/PD name and the information about prior Federal support, the last question above.)

Collection of this information is authorized by the NSF Act of 1950, as amended, 42 U.S.C. 1861, et seq. Demographic data allows NSF to gauge whether our programs and other opportunities in science and technology are fairly reaching and benefiting everyone regardless of demographic category; to ensure that those in under-represented groups have the same knowledge of and access to programs and other research and educational opportunities; and to assess involvement of international investigators in work supported by NSF. The information may be disclosed to government contractors, experts, volunteers and researchers to complete assigned work; and to other government agencies in order to coordinate and assess programs. The information may be added to the Reviewer file and used to select potential candidates to serve as peer reviewers or advisory committee members. See Systems of Records, NSF-50, "Principal Investigator/Proposal File and Associated Records", 63 Federal Register 267 (January 5, 1998), and NSF-51, "Reviewer/Proposal File and Associated Records", 63 Federal Register 268 (January 5, 1998).

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PI/PD Name: Pascal Hitzler

Gender: Male Female
Ethnicity: (Choose one response) Hispanic or Latino Not Hispanic or Latino

Race:
(Select one or more)
 American Indian or Alaska Native
 Asian
 Black or African American
 Native Hawaiian or Other Pacific Islander
 White

Disability Status:
(Select one or more)
 Hearing Impairment
 Visual Impairment
 Mobility/Orthopedic Impairment
 Other
 None

Citizenship: (Choose one) U.S. Citizen Permanent Resident Other non-U.S. Citizen

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PI/PD Name: Michael Kifer

Gender: Male Female
Ethnicity: (Choose one response) Hispanic or Latino Not Hispanic or Latino

Race:
(Select one or more)
 American Indian or Alaska Native
 Asian
 Black or African American
 Native Hawaiian or Other Pacific Islander
 White

Disability Status:
(Select one or more)
 Hearing Impairment
 Visual Impairment
 Mobility/Orthopedic Impairment
 Other
 None

Citizenship: (Choose one) U.S. Citizen Permanent Resident Other non-U.S. Citizen

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PI/PD Name: Marco Maratea

Gender: Male Female
Ethnicity: (Choose one response) Hispanic or Latino Not Hispanic or Latino

Race:
(Select one or more)
 American Indian or Alaska Native
 Asian
 Black or African American
 Native Hawaiian or Other Pacific Islander
 White

Disability Status:
(Select one or more)
 Hearing Impairment
 Visual Impairment
 Mobility/Orthopedic Impairment
 Other
 None

Citizenship: (Choose one) U.S. Citizen Permanent Resident Other non-U.S. Citizen

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PI/PD Name: Alessandra Mileo

Gender: Male Female
Ethnicity: (Choose one response) Hispanic or Latino Not Hispanic or Latino

Race:
(Select one or more)
 American Indian or Alaska Native
 Asian
 Black or African American
 Native Hawaiian or Other Pacific Islander
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 Visual Impairment
 Mobility/Orthopedic Impairment
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List of Suggested Reviewers or Reviewers Not To Include (optional)

SUGGESTED REVIEWERS:

Not Listed

REVIEWERS NOT TO INCLUDE:

Not Listed

COVER SHEET FOR PROPOSAL TO THE NATIONAL SCIENCE FOUNDATION

PROGRAM ANNOUNCEMENT/SOLICITATION NO./CLOSING DATE/if not in response to a program announcement/solicitation enter NSF 13-1					FOR NSF USE ONLY	
NSF 13-1					NSF PROPOSAL NUMBER	
FOR CONSIDERATION BY NSF ORGANIZATION UNIT(S) (Indicate the most specific unit known, i.e. program, division, etc.)					1344437	
IIS - INFO INTEGRATION & INFORMATICS						
DATE RECEIVED	NUMBER OF COPIES	DIVISION ASSIGNED	FUND CODE	DUNS# (Data Universal Numbering System)	FILE LOCATION	
05/31/2013	1	05020000 IIS	7364	094878394	05/31/2013 4:11pm	
EMPLOYER IDENTIFICATION NUMBER (EIN) OR TAXPAYER IDENTIFICATION NUMBER (TIN)		SHOW PREVIOUS AWARD NO. IF THIS IS <input type="checkbox"/> A RENEWAL <input type="checkbox"/> AN ACCOMPLISHMENT-BASED RENEWAL		IS THIS PROPOSAL BEING SUBMITTED TO ANOTHER FEDERAL AGENCY? YES <input type="checkbox"/> NO <input checked="" type="checkbox"/> IF YES, LIST ACRONYM(S)		
956006145						
NAME OF ORGANIZATION TO WHICH AWARD SHOULD BE MADE			ADDRESS OF AWARDEE ORGANIZATION, INCLUDING 9 DIGIT ZIP CODE			
University of California-Santa Barbara			Office of Research			
AWARDEE ORGANIZATION CODE (IF KNOWN)			Rm 3227 Cheadle Hall			
0013201000			SANTA BARBARA, CA 93106-2050			
NAME OF PRIMARY PLACE OF PERF			ADDRESS OF PRIMARY PLACE OF PERF, INCLUDING 9 DIGIT ZIP CODE			
Dept. of Geography, UC Santa Barbara			Dept. of Geography, UC Santa Barbara			
			1832 Ellison Hall			
			Santa Barbara ,CA ,931064060 ,US.			
IS AWARDEE ORGANIZATION (Check All That Apply) (See GPG II.C For Definitions)		<input type="checkbox"/> SMALL BUSINESS <input type="checkbox"/> FOR-PROFIT ORGANIZATION		<input type="checkbox"/> MINORITY BUSINESS <input type="checkbox"/> WOMAN-OWNED BUSINESS		<input type="checkbox"/> IF THIS IS A PRELIMINARY PROPOSAL THEN CHECK HERE
TITLE OF PROPOSED PROJECT Student Travel Fellowships: 2013 Web Reasoning and Rule Systems Conference						
REQUESTED AMOUNT \$	PROPOSED DURATION (1-60 MONTHS)	REQUESTED STARTING DATE	SHOW RELATED PRELIMINARY PROPOSAL NO. IF APPLICABLE			
9,000	6 months	07/01/13				
CHECK APPROPRIATE BOX(ES) IF THIS PROPOSAL INCLUDES ANY OF THE ITEMS LISTED BELOW						
<input type="checkbox"/> BEGINNING INVESTIGATOR (GPG I.G.2)			<input type="checkbox"/> HUMAN SUBJECTS (GPG II.D.7) Human Subjects Assurance Number _____			
<input type="checkbox"/> DISCLOSURE OF LOBBYING ACTIVITIES (GPG II.C.1.e)			Exemption Subsection _____ or IRB App. Date _____			
<input type="checkbox"/> PROPRIETARY & PRIVILEGED INFORMATION (GPG I.D, II.C.1.d)			<input type="checkbox"/> INTERNATIONAL COOPERATIVE ACTIVITIES: COUNTRY/COUNTRIES INVOLVED (GPG II.C.2.j)			
<input type="checkbox"/> HISTORIC PLACES (GPG II.C.2.j)						
<input type="checkbox"/> EAGER* (GPG II.D.2) <input type="checkbox"/> RAPID** (GPG II.D.1)						
<input type="checkbox"/> VERTEBRATE ANIMALS (GPG II.D.6) IACUC App. Date _____						
PHS Animal Welfare Assurance Number _____						
PI/PD DEPARTMENT		PI/PD POSTAL ADDRESS				
Geography		1832 Ellison Hall				
PI/PD FAX NUMBER		UC Santa Barbara				
805-893-2578		Santa Barbara, CA 931064060				
		United States				
NAMES (TYPED)	High Degree	Yr of Degree	Telephone Number	Email Address		
PI/PD NAME						
Krzysztof W Janowicz	DPhil	2008	805-880-2572	jano@geog.ucsb.edu		
CO-PI/PD						
Pascal Hitzler	PhD	2001	937-775-4879	pascal.hitzler@wright.edu		
CO-PI/PD						
Michael Kifer	PhD	1985	631-632-8459	kifer@cs.stonybrook.edu		
CO-PI/PD						
Marco Maratea	PhD	2005	010-353-2144	marco.maratea@unige.it		
CO-PI/PD						
Alessandra Mileo	DPhil	2006	085-845-8673	alessandra.mileo@deri.org		

CERTIFICATION PAGE

Certification for Authorized Organizational Representative (or Equivalent) or Individual Applicant

By electronically signing and submitting this proposal, the Authorized Organizational Representative (AOR) or Individual Applicant is: (1) certifying that statements made herein are true and complete to the best of his/her knowledge; and (2) agreeing to accept the obligation to comply with NSF award terms and conditions if an award is made as a result of this application. Further, the applicant is hereby providing certifications regarding conflict of interest (when applicable), drug-free workplace, debarment and suspension, lobbying activities (see below), nondiscrimination, flood hazard insurance (when applicable), responsible conduct of research, organizational support, Federal tax obligations, unpaid Federal tax liability, and criminal convictions as set forth in the NSF Proposal & Award Policies & Procedures Guide, Part I: the Grant Proposal Guide (GPG). Willful provision of false information in this application and its supporting documents or in reports required under an ensuing award is a criminal offense (U.S. Code, Title 18, Section 1001).

Conflict of Interest Certification

When the proposing organization employs more than fifty persons, the Authorized Organizational Representative (or equivalent) is required to complete the following certification regarding Conflict of Interest:

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is certifying that the organization has implemented a written and enforced conflict of interest policy that is consistent with the provisions of the NSF Proposal & Award Policies & Procedures Guide, Part II, Award & Administration Guide (AAG) Section IV.A; that to the best of his/her knowledge, all financial disclosures required by that conflict of interest policy have been made; and that all identified conflicts of interest will have been satisfactorily managed, reduced or eliminated prior to the organization's expenditure of any funds under the award, in accordance with the organization's conflict of interest policy. Conflicts which cannot be satisfactorily managed, reduced or eliminated must be disclosed to NSF.

Drug Free Work Place Certification

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent), is providing the Drug Free Work Place Certification contained in Exhibit II-3 of the Grant Proposal Guide.

Debarment and Suspension Certification

(If answer "yes", please provide explanation.)

Is the organization or its principals presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency?

Yes

No

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) or Individual Applicant is providing the Debarment and Suspension Certification contained in Exhibit II-4 of the Grant Proposal Guide.

Certification Regarding Lobbying

This certification is required for an award of a Federal contract, grant, or cooperative agreement exceeding \$100,000 and for an award of a Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding \$150,000.

Certification for Contracts, Grants, Loans and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Certification Regarding Nondiscrimination

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is providing the Certification Regarding Nondiscrimination contained in Exhibit II-6 of the Grant Proposal Guide.

Certification Regarding Flood Hazard Insurance

Two sections of the National Flood Insurance Act of 1968 (42 USC §4012a and §4106) bar Federal agencies from giving financial assistance for acquisition or construction purposes in any area identified by the Federal Emergency Management Agency (FEMA) as having special flood hazards unless the:

- (1) community in which that area is located participates in the national flood insurance program; and
- (2) building (and any related equipment) is covered by adequate flood insurance.

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) or Individual Applicant located in FEMA-designated special flood hazard areas is certifying that adequate flood insurance has been or will be obtained in the following situations:

- (1) for NSF grants for the construction of a building or facility, regardless of the dollar amount of the grant; and
- (2) for other NSF grants when more than \$25,000 has been budgeted in the proposal for repair, alteration or improvement (construction) of a building or facility.

Certification Regarding Responsible Conduct of Research (RCR)

(This certification is not applicable to proposals for conferences, symposia, and workshops.)

By electronically signing the Certification Pages, the Authorized Organizational Representative is certifying that, in accordance with the NSF Proposal & Award Policies & Procedures Guide, Part II, Award & Administration Guide (AAG) Chapter IV.B., the institution has a plan in place to provide appropriate training and oversight in the responsible and ethical conduct of research to undergraduates, graduate students and postdoctoral researchers who will be supported by NSF to conduct research. The AOR shall require that the language of this certification be included in any award documents for all subawards at all tiers.

CERTIFICATION PAGE - CONTINUED

Certification Regarding Organizational Support

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is certifying that there is organizational support for the proposal as required by Section 526 of the America COMPETES Reauthorization Act of 2010. This support extends to the portion of the proposal developed to satisfy the Broader Impacts Review Criterion as well as the Intellectual Merit Review Criterion, and any additional review criteria specified in the solicitation. Organizational support will be made available, as described in the proposal, in order to address the broader impacts and intellectual merit activities to be undertaken.

Certification Regarding Federal Tax Obligations

When the proposal exceeds \$5,000,000, the Authorized Organizational Representative (or equivalent) is required to complete the following certification regarding Federal tax obligations. By electronically signing the Certification pages, the Authorized Organizational Representative is certifying that, to the best of their knowledge and belief, the proposing organization:

- (1) has filed all Federal tax returns required during the three years preceding this certification;
- (2) has not been convicted of a criminal offense under the Internal Revenue Code of 1986; and
- (3) has not, more than 90 days prior to this certification, been notified of any unpaid Federal tax assessment for which the liability remains unsatisfied, unless the assessment is the subject of an installment agreement or offer in compromise that has been approved by the Internal Revenue Service and is not in default, or the assessment is the subject of a non-frivolous administrative or judicial proceeding.

Certification Regarding Unpaid Federal Tax Liability

When the proposing organization is a corporation, the Authorized Organizational Representative (or equivalent) is required to complete the following certification regarding Federal Tax Liability:

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is certifying that the corporation has no unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

Certification Regarding Criminal Convictions

When the proposing organization is a corporation, the Authorized Organizational Representative (or equivalent) is required to complete the following certification regarding Criminal Convictions:

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is certifying that the corporation has not been convicted of a felony criminal violation under any Federal law within the 24 months preceding the date on which the certification is signed.

AUTHORIZED ORGANIZATIONAL REPRESENTATIVE		SIGNATURE		DATE
NAME Alexa Greco		Electronic Signature		May 31 2013 1:56PM
TELEPHONE NUMBER 805-893-3890	EMAIL ADDRESS greco@research.ucsb.edu	FAX NUMBER 805-893-2611		
<p>* EAGER - EARly-concept Grants for Exploratory Research ** RAPID - Grants for Rapid Response Research</p>				

PROJECT SUMMARY

Overview:

The Semantic Web is gaining momentum. Advances in fundamental research in the past decade, together with the advent of Linked Open Data, promise to provide significant added value to businesses and individuals alike. Major IT companies, such as IBM, Oracle, and Microsoft, as well as application developers join the Semantic Web effort and draw on available tools and technologies. A key driver of the success of Semantic Technologies is so-called ontology modeling languages, e.g., RDF, OWL, and RIF, standardized by the World Wide Web Consortium. These languages come with formal semantics, which enables the inferencing of implicit knowledge from explicitly given knowledge, in a formal and well-defined way. This form of inference is what is called Web Reasoning, and the study of it includes the study of existing ontology languages, their further development, their interaction, algorithms for inferencing and their implementations, applications driven by formal semantics, reasoning-driven ontology engineering, and so forth. The demands on graduate students entering the area of Web Reasoning—both industrial and academic—are high. A successful student needs to deeply develop both the formal and mathematical underpinnings and the challenging software engineering issues related to algorithm implementation in this area, in particular with respect to scalability issues. They furthermore have to deal with a rapidly advancing field. It is therefore of great importance that graduate students have the opportunity to discuss ideas, trends, and technical aspects with key researchers in the area, to start developing their professional contacts, and to extend their knowledge of the state of the art. The primary and most effective way to do this is to participate in key scientific conferences and interact with other researchers working in the field. The Web Reasoning and Rule Systems conference series, established in 2007, is driven by some of the key researchers in the field of Web Reasoning, and attracts a substantial number of highly visible researchers and submissions each year. In response to the high demands on graduate students in this area, the conference has established a practice of co-locating the event with the Reasoning Web Summer School, and is pursuing options to further enhance the educational aspect of its events. In this proposal, we request NSF support for promising U.S. students for attending the conference. A dedicated mentoring program and student conference events will be put in place for the maximum benefit of participating students. This year, special attention is given to attract students which are from groups outside those already involved in Web Reasoning, to further broadening both participation and related research fields discussed at the conference.

Intellectual Merit :

The proposed activity addresses a bottleneck in student education in the field of Web Reasoning. The PIs belong to the group of the main drivers of the conference series. They are established researchers with high visibility and proven track record of successful student mentoring. The conference itself is a premier event attended by prominent researchers in the area.

Broader Impacts :

The proposed activity furthers technological advancement in the emerging area of Web Reasoning, which is currently seeing substantial industrial interest and uptake. This is achieved through the enhancement of next generation computer scientists, with long-term benefits both to industry and academia. Actions will be implemented in order to broaden the Web Reasoning visibility, by trying to attract students from “new” research groups.

Key Words: Web Reasoning; ontology and rule languages; formal semantics; logic programming; ontology-based systems; student mentoring and support

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*Proposers may select any numbering mechanism for the proposal. The entire proposal however, must be paginated. Complete both columns only if the proposal is numbered consecutively.

Project Description

Student Travel Fellowships: 2013 Web Reasoning and Rule Systems Conference

1 Introduction: Web Reasoning and Its Educational Need

A major international research effort is currently under way to improve the existing World Wide Web (WWW), with the intention to create what is often called the Semantic Web [17]. Driven by the World Wide Web Consortium (W3C) and its director Sir Tim Berners-Lee, the inventor of the WWW, with significant funding by DARPA, the European Commission, NSF, NIH, and many other agencies, Semantic Web has become an established field of research. It integrates methods and expertise from many subfields of Computer Science and Artificial Intelligence [31], and it has now reached sufficient maturity for industrial applications [15]. Correspondingly, it has begun to draw investments by major IT and venture capital companies.

The Semantic Web is based on the idea of describing the meaning—or semantics—of data on the Web using metadata (*i.e.*, data that describes other data) in the form of ontologies [17]. Ontologies are represented using languages based on formal logic, and one of their key features is that they enable access to implicit knowledge through formal logical reasoning [19]. The computational realization of this is called automated reasoning, which thus enables intelligent information management methods for search, integration, browsing, organization, and reuse of information, and is thus a flexible method which provides added value for content management applications. We (and others) refer to this as *Web Reasoning*.

The W3C has established several standards for such ontology languages, primarily the Web Ontology Language OWL [16], which is based on Description Logics [1], the Rule Interchange Format RIF [4, 5] based on rules and logic programming [18, 23], and the Resource Description Framework RDF [25] including RDF Schema [6]. Web Reasoning with ontology languages is a very active field of research and development, in matters concerning both foundations and applications, with significant industrial interest and investment. The interest in logic programming for dealing with incomplete and inconsistent knowledge on the Web is also being investigated [28, 22], also in combination with statistical methods for pattern analysis and prediction [14].

To realize the economic potential of Web Reasoning, it is necessary to educate a body of graduate students, such that in their future careers they can transfer the required hard knowledge and soft skills to application areas in industry. It should be realized that this educational task is challenging, since successful Web Reasoning development requires both theoretical and practical skills, more precisely it requires a deep understanding of formal and mathematical underpinnings, and at the same time excellent software engineering skills for realizing commercial-strength implementations of reasoning algorithms. The field is furthermore rapidly evolving and broadening in the set of related foundational research, and it has already reached substantial size.

An efficient way to address this educational bottleneck is to expose students early in their research career to state-of-the-art research across the related fields, and to aid them in establishing professional relationships with prominent researchers in those fields. This is typically done as part of special events and activities in the context of an international conference with a high density of world-class researchers.

In this proposal, we request support for promising U.S. students to enable them to attend one of the key conferences in the area, the 2013 Web Reasoning and Rule Systems conference. In the following, we provide further background, describe student selection, activities at the conference

that further the educational goal just described and the special actions we implement this year to attract students which are not from any of the groups already involved in the conference.

2 The Event

The Web Reasoning and Rule Systems conference series (RR) was established in 2007 by key researchers in the area, because they realized a need for a focused conference on the topic, in order to develop and drive the research community and to increase outreach to application areas. Until 2009, the conference was co-located with other major conferences in Semantic Web. Starting 2010, the conference is a stand-alone event and in turn began to attract satellite events, such as SWAP, BuRO and KRDBs in 2010, and the Reasoning Web Summer School in 2011 and 2012.

Establishing the conference series was a joint effort of researchers from the REWERSE European Network of Excellence, participants in the RuleML initiative, and other researchers and practitioners in Web Reasoning who formed an informal association. In 2009, the Web Reasoning and Rule Systems Conference Association (RRA) was formally established as a German non-profit organization (e.V.) for the public good. Current and past members of the association, which includes the RR Steering Committee, comprise some of the most prominent and active researchers in the area:

- Jose Alferes, Universidade Nova de Lisboa (Portugal)
- Harold Boley, University of New Brunswick (Canada)
- Francois Bry, University of Munich (Germany)
- Diego Calvanese, Free University of Bozen-Bolzano (Italy)
- Thomas Eiter, Technische Universität Wien (Austria)
- Pascal Hitzler, Wright State University, Dayton OH (U.S.A.)
- Krzysztof Janowicz, University of California, Santa Barbara (U.S.A.)
- Michael Kifer, Stony Brook University, New York (U.S.A.)
- Georg Lausen, University of Freiburg (Germany)
- Thomas Lukasiewicz, Oxford University (United Kingdom)
- Massimo Marchiori, Università di Padova (Italy)
- Alessandra Mileo, DERI Galway (Ireland)
- Jeff Z. Pan, University of Aberdeen (United Kingdom)
- Guilin Qi, Southeast University (China)
- Axel Polleres, Siemens AG (Austria)
- Riccardo Rosati, Università di Roma La Sapienza (Italy)
- Sebastian Rudolph, University of Karlsruhe (Germany)

- Christian de Sainte Marie, IBM and ILOG (France)
- Bruce Spencer, University of New Brunswick (Canada)
- Heiner Stuckenschmidt, University of Mannheim (German)
- Terrance Swift, Universidade Nova de Lisboa (Portugal) and Johns Hopkins University (U.S.A.)
- Holger Wache, University of Applied Sciences Northwestern Switzerland (Switzerland)

For further information about the RRA, and about past conference events, please have a look at the website of the RRA at <http://www.rr-conference.org/>.

Pursuing the original idea of creating a hub for Web Reasoning research, the steering committee adopted a policy of cooperation with other events, including co-location, collaboration, and federation with other activities in this area. The most important and successful of these so far is the co-location and co-organization with the Reasoning Web Summer School in 2011 and 2012, which will continue in 2013 (with a joint local organization chair), and possibly further on. The introduction of a Doctoral Consortium in 2012 has been a very successful experience, fostering the participation of doctoral students, exposing them to disciplines related to Web Reasoning, and putting them in direct contact with world-class researchers in the field. Thanks to this initiative, which will be carried over in 2013 and possibly further, new interesting challenges and topics have emerged, which we believe will contribute to make the community stronger and of higher impact.

The conference organization frequently collaborated with the RuleML Symposium, e.g. through a joint keynote talk in 2008 (delivered by co-PI Michael Kifer). The RuleML Symposium directly targets industry; it is closely related to RR, but has a different focus. In 2012, there was a joint keynote with Datalog2.0 workshop.

The conference maintains a very high standard with full paper acceptance rate consistently at about 30%. Proceedings are published in Springer's Lecture Notes in Computer Science series, and for 2011 and 2012 corresponding journal special issues are in preparation, to be published in the Semantic Web journal by IOS Press. This practice will continue also in 2013. Chairs and program committee members are selected on the basis of their internationally established reputation.

RR2011 had seen a rise in attendance of approx. 40% compared to RR2010; RR2012 has increased the attendance of a further 15%.

PI Krzysztof Janowicz has been sponsorship chair of both RR2010 and RR2011, while Co-PI Marco Maratea has been sponsorship chair of RR2012, and the amount of sponsoring through industry, EU research projects, and organizations has exceeded 25% of the total conference budget since 2010 —an evidence for the high quality of the conference, of the prominence of the researchers involved, and of the importance of the topic to the industry.

The 7th International Conference on Web Reasoning and Rule Systems, RR2013¹, will take place on July 27-29, in Mannheim, Germany, and will be co-located with the 2013 Reasoning Web Summer School, RW2013², and also with the 26th International Workshop on Description Logics. Detailed planning is currently under way, and the chairs have already been chosen, as follows:

- General Chair: Sebastian Rudolph, Karlsruhe Institute of Technology (KIT), Germany
- Program Committee Chairs: Wolfgang Faber, Università della Calabria, Italy, and Domenico Lembo, Sapienza Università di Roma La Sapienza, Italy

¹<http://rr2013.uni-mannheim.de/>.

²<http://rw2013.uni-mannheim.de/>.

- Doctoral Consortium Chair: Alessandra Mileo, DERI Galway, Ireland
- Local Organization Chair: Heiner Stuckenschmidt, University of Mannheim, Germany
- Sponsorship Chair: Marco Maratea, Università di Genova, Italy

3 Project Goal and Rationale

In this project we will leverage the past successful experience in organizing the Web Reasoning and Rule Systems Conference, and meeting the expected goals. However, we will also try to meet new objectives.

The general goal of the project is to enhance the education of selected graduate students in Web Reasoning. This will be realized by enabling them to attend the 2013 Web Reasoning and Rule Systems Conference, which will include specially organized events catering to students.

This conference pays attention to improving student education in the field of Web Reasoning. The PI and co-PIs are some of the key movers behind the conference series and are highly visible, established researchers with a track record of successful student mentoring. The conference organization and governance includes many prominent researchers in the area. The conference will help nurture the next generation of Semantic Web researchers by enabling students to meet key researchers at the conference and take part in face-to-face discussions with them.

The proposed activity furthers technological advancement in the emerging area of Web Reasoning, which is currently seeing substantial industrial interest and uptake. Supporting the educational mission of the conference will bring long-term benefits both to industry and academia.

This year particular attention will be also paid for implementing actions to attract students which are not from any of the groups already involved in the conference. The specific actions are reported through our dissemination plan in the following section.

4 Dissemination Plan

In the following we report the specific actions that we plan to implement in order to attract students which are not part of the traditional groups already involved in RR. This goal will be pursued through:

- Direct contacts: the PI and co-PIs will contact researchers that work in areas of interest to RR, but are not involved in RR, to encourage their students to apply for funding. Candidate names include: Natasha Noy, Deborah McGuinness, Chitta Baral, Tim Finin, Kenneth Forbus, Yolanda Gil, Jeff Heflin, James Hendler, Craig Knoblock, Joohyung Lee, Yuliya Lierler, Vladimir Lifschitz, Mark Schildhauer, Charles Vardeman. These are among the most recognized researchers in the related fields of Knowledge Representation and Reasoning, Answer Set Programming,³ Geospatial data integration [12, 13, 3, 9].
- Explicitly addressing other communities in the selection of courses at the Reasoning Web Summer School. The RW2013 program already contains lectures about the following topics: linked data, geographic information, probabilistic methods.

³The RR2013 program also features an invited talk by Nicola Leone, Università della Calabria, Italy, leading researcher in Answer Set Programming.

- Stating in the calls for papers and attendance that we expect to be able to help some of the U.S. students to attend the conference with travel expenses.

5 Student Events at the Conference

In order to maximize the benefits of participating students, and learning from the experience from last year, two special events will be put in place: A poster presentation session and a mentoring lunch.

The poster presentation session will give the students the opportunity to present their dissertation plan, including their already established results as well as their work plan for completion of the thesis. The poster will be accompanied by a written version of the dissertation plan, which will be submitted and reviewed before the conference, and which will be distributed at the conference. The poster presentation session will be preceded by a spotlight presentations session where poster presenters give 5-minute teaser talks as advertisement for their posters.

The mentoring lunch will consist of a lunch break where a senior researcher shares a lunch table with 4-5 students. The researcher will be charged with initiating and driving a discussion on general topics concerning research, career, and Web Reasoning as a discipline. He will also be available to answer students' questions. Questions will be collected beforehand and this will make it possible to assign the right mentor to the right group of students, and will facilitate lively and interesting discussions.

Ideally, a student sponsored through this project will participate in both activities. Mentors will be selected from prominent researchers who are attending the conference anyway, so this will not incur additional costs.

Announcements of the sponsorships will be made through multiple channels, primarily through the conference website and as part of the call for papers. We will also leverage the established distribution channels of the Reasoning Web Summer School. This year these announcements will be focused toward students from groups not already involved in RR, in addition to the specific announcements described in Section 4.

6 Student Selection

The goal of the student selection process detailed below is to ensure that the selected students will draw the most benefit from the sponsorship. A single type of sponsorship will be available, which will guarantee adequate coverage of related expenses.

Sponsorship will be in the amount of \$1,500 per student. They will cover travel and other expenses for attending RR2013. Sponsored students may choose to seek additional funding from other sources such that they can also attend the Reasoning Web Summer School. There will be 6 of such sponsorships available.

All students at U.S. universities are eligible to apply for the sponsorships. Among the applicants, students will be selected by a committee consisting of the PIs and the chairs of RR2013. In their decisions, the committee members will adhere to the following preferences for selection, and disagreements will be resolved by majority vote, with the principal PI's vote as tiebreaker.

1. Students who have submitted a dissertation plan for review, and the reviews found the dissertation plan to be of high quality and on an important topic. These students will present a poster and a spotlight talk based on their dissertation plan.
2. Students who are first authors of research papers at the conference, and who provide convincing evidence that they would not be able to attend all or part of the event without a sponsorship. These students will be given an option to also present a dissertation plan poster.
3. Students who are co-authors of research papers at the conference, and who provide convincing evidence that they would not be able to attend all or part of the event without sponsorship. These students will be given an option to also present a dissertation plan poster.
4. Students who have submitted a dissertation plan for review, but the reviews found the dissertation plan of lesser quality. These students will present a poster and a spotlight talk based on their dissertation plan.
5. All other students.

We will also give preference to students whose advisors are not part of the RR community, even if they rank lower in the preference list above.

Secondary criteria are to be used as tiebreakers at the discretion of the selection committee as follows: students belonging to an underrepresented group, students presenting evidence of financial hardship, students in early stages of their PhD studies, quality of the dissertation plan as assessed by the reviews, quality of the (co-)authored RR2013 research paper as assessed by the reviews. In order to apply these criteria in the evaluation process, dates of submission and notifications for RR2013 Doctoral Consortium and for the grant will be aligned accordingly.

7 Further Leveraging of NSF Support

NSF funds will be leveraged to attract additional funding for student support. We will pursue at least the following options, in collaboration with the RR2013 local organization. The rationale used for this additional acquisition is that NSF funds already provide significant base funding which can be extended by additional funds.

The options are:

- Approaching past RR conference sponsors, asking them explicitly if they would like to sponsor student participation or an “outstanding dissertation plan award”. Likely sponsors include publishing houses which have sponsored RR in the past, such as Elsevier, Springer and IOS Press, or new candidate sponsors such as the European Coordinating Committee for Artificial Intelligence (ECCAI).
- Offering the opportunity to the best sponsors to have reduced-cost registration fees, to be used preferably by students.
- Approaching particular new and local sponsors who are very likely to further support student participation due to available NSF base funding, including the following
 - Fluid Operations, <http://www.fluidops.com/>

- Semafora, <http://www.semafora-systes.com/>
- LOD2, <http://lod2.eu/>
- SOFTPLANT, <http://www.softplant.de/en.html>

- We will approach the DL2013 organizers and chairs whether they would be amenable to support our sponsored students, e.g. by a reduced or waived conference fees, so that the students can also learn about the adjacent topics covered at DL2013. RR2013, RW2013 and DL2013 are co-located in Mannheim, Germany, and are part of the Logic Summer 2013.

Due to the strong past record in attracting sponsors for the RR conferences, we are confident that we will be able to attract additional student sponsoring with the help of the NSF funds.

8 The Team and Unfunded Collaborations

The project team consists of the U.S.-based researchers most active in running of the RR conference series, together with the RR2013 Doctoral Consortium and Sponsorship Chairs.

- Krzysztof Janowicz is member of the RRA and was the Sponsorship Chair at RR2010 and RR2011. He is also the RRA website administrator. He will administer this year's NSF funding for student attendance at RR2013.
- Pascal Hitzler is a founding member of the RRA, and member of the steering committee of the RRA. He is the former vice president of the RRA. He was RR2009 Sponsorships Chair, RR2010 program chair, and RR2012 general chair. He administered last year's NSF funding for student attendance at RR2012.
- Michael Kifer is President of the RRA and a member of the steering committee of the RRA. He was an RR2008 invited keynote speaker (in a joint keynote with RuleML2008), and the RR2009 general and local organization chair.
- Alessandra Mileo is member of the RRA and is Doctoral Consortium Chair of RR2013. She was Doctoral Consortium Chair of RR2012. She was also a member of the Local Organization Committee of RR2011 and of the Local Arrangements Committee of the 2011 Reasoning Web Summer School.
- Marco Maratea is Sponsorship Chair of RR2013 and RW2013. He was Sponsorship Chair for the same events in 2012.

The PI has a track record in supporting young students at the undergraduate and graduate level which resulted in several international publications with students as first authors. For instance, he published at GIScience 2010 with his female Master student Stephanie Duce as first author [11] and at COSIT 2011 with his Master student Christoph Mülligann as first author [30]. Both conferences are core events of the Geographic Information Science community. Currently he is working with a female undergraduate student at UCSB (Sizhu Wang) on a research project about Linked Spatiotemporal Data. Krzysztof Janowicz has a long tradition of publishing open source software and also open content such as an O'Reilly book on Internet security published as Openbook [21]. He is also a member of a German political party which has gender equality and integration of minorities as part of its core political agenda.

Co-PI Pascal Hitzler has a considerable track record in engaging and advising students at all levels in such a way that it yields internationally competitive research results. E.g., [2, 7, 8, 10, 20, 24, 26, 27, 29] are publications where the primary author is either an undergraduate or a Master student. The Co-PI has furthermore over 10 years of experience in conducting enhancement programs for high-school students in Germany, through the organization of summer schools and other events, and he has lectured in and about such programs at several occasions. He is also a member of the editorial board of a German book series on enhancement programs, he was treasurer of the German association *Verein zur Förderung mathematisch begabter Jugendlicher* and is assistant treasurer of the German association *Emmy Noether Verein*, both of which run such enhancement programs with particular emphasis on furthering women in the sciences and in mathematics. His current research lab comprises 8 PhD students, 2 Master students, and 2 undergraduate researchers, including 3 women, and spanning over 4 ethnicities and 8 nationalities.

Co-PI Michael Kifer has over 25 years of experience mentoring Ph.D. and M.S. students in research. He was also active in promoting undergraduate research through several REU supplements to NSF grants over the years. Most of his over 100 publications (some of which are among the most cited in Computer Science) have been co-authored with his students. For seven years he has also been the Director of Graduate Studies at the Computer Science Department at Stony Brook. During his tenure the graduate program doubled in size.

Co-PI Alessandra Mileo has a track record in tutoring for the AI lab at the University of Milan and supporting and mentoring undergraduate students since her PhD. Since she joined DERI, NUIG as a Post-doctoral researcher and Unit Leader, she has been appointed as adjunct lecturer at NUIG, and she is now co-lecturer of the Emerging Web Media module as part of the Master in Digital Media. She is supervising two PhD students at the moment, and their research activity recently resulted in three conference papers under submission and a National Research Grant proposal currently under investigation. A remarkable result has also been the active involvement of one of DERI's industry partners in Access Control Policies research through the creation of a Research and Development unit within the enterprise. In the last year of her PhD, Alessandra Mileo obtained a Master in Organization and Sociology of Sports, the final dissertation titled "CyberSport: an Intelligent System supporting educators in prevention of psycho-social disorders through sport." She has also been an active member of the Deaf society in the city of Milan, whose main objective was that of teaching the Italian Language of Signs to parents and family members of deaf children in school age.

Co-PI Marco Maratea has a track record in tutoring for the STAR-Lab at the University of Genova and supporting and mentoring undergraduate, both in conducting research and through a special Tutoring program implemented in his department, and graduate students. Most of its undergraduate students co-authored a research paper presenting the results of their thesis in international workshops and conferences, and a graduate student he co-advised published 8 papers in international workshops, conferences and journals.

Further unfunded collaborators are the other chairs of RR2013, as listed in Section 2.

9 Results from Prior NSF Support

The PI, Krzysztof Janowicz, and the Co-PIs Pascal Hitzler, Michael Kifer, and Alessandra Mileo have received NSF funding last year through award 1202841 *Student Travel Fellowships: 2012 Reasoning Web Summer School and the Web Reasoning and Rule Systems Conference* (Pascal Hitzler as PI administered this grant). The project has run from February 2012 to January 2013 for

a total funding of \$14,850 (\$13,500 for participant support plus a 10% administrative overhead). The project aimed at supporting promising U.S. students for attending the 6th International Conference on Web Reasoning and Rule Systems⁴ and the 8th Reasoning Web Summer School,⁵ both held in Vienna, Austria, 3-12 September 2012.

As a result of this project, 9 students were granted to participate in the conference: without these grants, they could not have attended the event. Most of these students were involved in a number of initiatives. The first was a *mentoring lunch* where a senior researcher shared a lunch table with 4-5 students. In this initiative, the researchers were in charge of initiating and driving a discussion on both general and specific topics concerning research, career, and Web Reasoning as a discipline. Collecting few core questions from students beforehand helped setting up the groups and fostering lively discussions. A second initiative was the *poster presentation session*, accompanied by a written research summary distributed at the conference and preceded by a spotlight presentations session where poster presenters gave 5-minute teaser talks as advertisement for their posters. This resulted in a very well attended and fruitful poster session.

Moreover, some of these students had accepted submissions to the Doctoral Consortium⁶ and these were published in the Springer LNAI conference proceedings, and/or were co-authors in papers accepted at the conference. This made them an active part of the meeting, which we expect to grow further also thanks to NSF support.

As another result, the NSF support stimulated other funding to be used to attract other students, e.g. the Reasoning Web Summer School granted additional support for 6 non-US students: in this way, the students of the Summer School were able to stay for the conference, to participate in the above mentioned initiatives, and to interact with the US students and researchers.

Co-PI Marco Maratea is not affiliated with a U.S. organization and has not received NSF funding so far.

⁴<http://www.kr.tuwien.ac.at/events/rr2012/>.

⁵<http://www.kr.tuwien.ac.at/events/rw2012/>.

⁶<http://www.kr.tuwien.ac.at/events/rr2012/DoctoralConsortium.html>.

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- [29] T. Matzner and P. Hitzler. Any-world access to OWL from Prolog. In J. Hertzberg, M. Beetz, and R. Englert, editors, *KI 2007: Advances in Artificial Intelligence, 30th Annual German Conference on AI, KI 2007, Osnabrück, Germany, September 2007, Proceedings*, volume 4667 of *Lecture Notes in Computer Science*, pages 84–98. Springer, Berlin, 2006.
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- [31] R. Studer. The Semantic Web: Suppliers and customers. In I. F. Cruz, S. Decker, D. Allemang, C. Preist, D. Schwabe, P. Mika, M. Uschold, and L. Aroyo, editors, *The Semantic Web - ISWC 2006, 5th International Semantic Web Conference, ISWC 2006, Athens, GA, USA, November 5-9, 2006, Proceedings*, volume 4273 of *Lecture Notes in Computer Science*, pages 995–996. Springer, 2006.

Biographical Sketch

Krzysztof Janowicz, Department of Geography, University of California, Santa Barbara, CA, USA

Professional Preparation

Universität Münster, Germany	Ecology	Diplom	2003
Universität Münster, Germany	Geographic Information Science	PhD	2008

Appointments

2011 –	Assistant Professor for Geographic Information Science, Department of Geography, University of California, Santa Barbara, CA
2009 – 2011	Assistant Professor for Geographic Information Science, GeoVISTA Center, Department of Geography, The Pennsylvania State University, University, PA.
2008 – 2009	Postdoctoral Researcher, Institute for Geoinformatics, University Münster, Germany
2003 – 2008	Research Associate, Institute for Geoinformatics, University Münster, Germany

5 Publications Related to the Proposal

- Janowicz, K., Schade, S., Bröring, A., Keßler, C., Maue, P. and Stasch, C. (2010): Semantic Enablement for Spatial Data Infrastructures. *Transactions in GIS* 14(2), Blackwell Publishing, pp. 111-129.
- Janowicz, K., Bröring, A., Stasch, C., Schade, S., Everding, T., and Llaves, A. (2011): A RESTful Proxy and Data Model for Linked Sensor Data. *International Journal of Digital Earth*, pp. 1-22.
- Janowicz, K. (2012): Observation-Driven Geo-Ontology Engineering. *Transactions in GIS*, 16(3), pp. 351-374.
- Li, N., Raskin, R., Goodchild, M., and Janowicz, K. (2012): An Ontology-Driven Framework and Web Portal for Spatial Decision Support. *Transactions in GIS*, 16(3), pp. 313-329.
- Janowicz, K., Raubal, M., and Kuhn, W. (2011): The Semantics of Similarity in Geographic Information Retrieval. *Journal of Spatial Information Science*. (2):29–57, 2011.

5 Other Significant Publications

- Compton, M., Barnaghi, P., Bermudez, L., Garcia-Castro, R., Corcho, O., Cox, S., Graybeal, J., Hauswirth, M., Henson, C., Herzog, A., Huang, V., Janowicz, K., Kelsey, W. D., Le Phuoc, D., Lefort, L., Leggieri, M., Neuhaus, H., Nikolov, A., Page, K., Passant, A., Sheth, A., and Taylor, K. (accepted): The SSN Ontology of the W3C Semantic Sensor Network Incubator Group. *Journal of Web Semantics*.
- Bröring, A., Maue, P., Janowicz, K., Nüst, D., and Malewski, C. (2011): Semantically-Enabled Sensor Plug & Play for the Sensor Web. *Sensors* 2011, 11, 7568-7605.
- Ye, M., Shou, D., Lee, W.-C. , Yin, P., and Janowicz, K. (2011): On the Semantic Annotation of Places in Location-Based Social Networks. In C. Apte, J. Ghosh, and P. Smyth, editors, 17th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, pages 520-528.
- Adams, B. and Janowicz, K. (2011): Constructing Geo-Ontologies by Reification of Observation Data. ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (GIS) 2011, November 1-4, 2011, Chicago, Illinois. ACM Press, pp. 309-318.
- Janowicz, K. (2010): The Role of Space and Time For Knowledge Organization on the Semantic Web. *Semantic Web Journal*. Volume 1, Number 1-2, pp. 25-32, IOS Press.

Synergistic Activities (selection)

- Conference involvement: PC Chair (GEOS2009, EKAW2014), Sponsor Chair (RR2010, RR2011), Workshop Chair (EKAW2012), Proceedings Chair (ISWC2013), PC Chair Cognition & Semantic Web Track (EKAW 2013) (Co-)Organized Workshops (GiDBA 2012, P-KAR 2012,

GeoVoCampSB2012, GeoVoCampDayton2012, CEMob 2011, LSTD2010, Semantic Similarity and Applications 2007, Cognitive Engineering 2004). PC member: ISWC 2012, ESWC 2012, ACM GIS 2012, ACM GIS 2011 ISWC 2011, ESWC2011, ISWC2010, ESWC2010, ACM GIS 2010, RR2010, OM2010, DE2010, VORTE2010 VISSW2010, SSN2010, GEOProcessing2010, GEOWS2009, OM2009, FOIS2008, AGILE2008, OTM/SWWS2007.

- Journal involvement: Editor-in-chief of the IOS Press journal Semantic Web – Interoperability, Usability, Applicability. Editorial board of the Central European Journal of Geosciences (CEJG) Referee for journals: International Journal of Geographical Information Science, Spatial Cognition and Computation, Journal of Web Semantics, Transactions in GIS, Semantic Web Journal, Computers & Geosciences, Journal of Cognitive Systems Research, Geoinformatica, IEEE Internet Computing
- Book author for O'Reilly Press with a book on Internet Security: Sicherheit im Internet Köln, O'Reilly, 3rd Edition, ISBN 3897217155. Springer Press textbook on Geospatial Semantics scheduled for spring of 2013.

Collaborators and Co-Editors: Benjamin Adams (UC Santa Barbara), Payam Barnaghi (University of Surrey), Boris Bäumer (University of Münster), Mohamed Bishr (University of Münster), Matthias Braun (University of Münster), Arne Bröring (University of Münster), Christoph Brox (University of Münster), David Carral Martinez (Wright State University), Raúl García Castro (Universidad Politécnica de Madrid), Michael Compton (CSIRO ICT Centre), Oscar Corcho (Universidad Politécnica de Madrid), Anusuria Devaraj (University of Münster), Thorsten Diekhof (University of Münster), Stephanie Duce (University of Münster), Sören Dupke (University of Münster), Martin Espeter (University of Münster), Thomas Everding (University of Münster), Mike Goodchild (UC Santa Barbara), John Graybeal (UC San Diego), Glen Hart (Ordnance Survey), Cory Henson (Wright State University), Arthur Herzog (Fraunhofer Gesellschaft), Pascal Hitzler (Wright State University), Yingjie Hu (UCSB), Carsten Keßler (University of Münster), Werner Kuhn (University of Münster), Antonio Krüger (DFKI), Adila Krisnadh (Wright State University), Manfred Lange (University of Münster), Laurent Lefort (CSIRO ICT Centre), Sergei Levashkin (Centro de Investigación en Computación Mexico City), Wang-Chien Lee (Pennsylvania State University), Michael Lutz (European Commission – Joined Research Centre), Patrick Maué (University of Münster), Grant McKenzie (UC Santa Barbara), Jörg Müller (University of Münster), Christoph Mülligann (University of Münster), Holger Neuhaus (CSIRO ICT Centre), Andriy Nikolov (The Open University), Nicole Ostländer (European Commission – Joined Research Centre), Oliver Paczkowski (University of Münster), Kevin Page (University of Southampton), Ilija Panov (University of Münster), Todd Pehle (Orbis Technologies), Florian Probst (SAP), Hardy Pundt (Harz University of Applied Sciences), Martin Raubal (UC Santa Barbara), Ilka Reis (National Institute for Space Research (INPE) Brazil), Catharina Riedemann (University of Münster), Sven Schade (European Commission – Joined Research Centre), Simon Scheider (University of Münster), Franca Scherer (University of Münster), Johannes Schöning (DFKI), Mirco Schwarz (University of Münster), Angela Schwering (University of Münster), Sumit Sen (University of Münster), Dong Shou (Pennsylvania State University), Christoph Stasch (University of Münster), Kerry Taylor (CSIRO ICT Centre), Charles Vardeman (University of Notre Dame), Marion Wilde (University of Münster), Marc Wilkes (University of Münster), Mao Ye (Pennsylvania State University), Peifeng Yin (Pennsylvania State University)

Graduate Advisors and Postdoctoral Sponsors: Werner Kuhn (University of Münster), Edzer Pebesma (University of Münster), Martin Raubal (UC Santa Barbara), Maria Andrea Rodríguez-Tastets (Universidad de Concepción)

Master or PhD Graduate Thesis Advisees and Postgraduate-Scholar Sponsored: Thorsten Diekhof, Stephanie Duce, Christoph Mülligann, Franca Scherer, Mirco Schwarz, Marc Wilkes (all University of Münster), Reza Kalbasi Khoramdashti (ITC NL), Crista Livecchi (PSU), Benjamin Adams, Grant McKenzie, Yingjie Hu, Song Geo, (all UCSB), Simon Scheider (UCSB) (12 graduates, 1 postdoc)

Pascal Hitzler, Kno.e.sis Center, College of Engineering and Computer Science, Wright State University, Dayton, OH. <http://www.knoesis.org/pascal/>, pascal.hitzler@wright.edu

Professional Preparation

Universität Tübingen, Germany	Mathematics	Diplom	1998
National University of Ireland Cork	Mathematics	PhD	2001
TU Dresden, Germany	Computer Science	Habilitation	2005

Appointments

From Sep 2012	Associate Professor, Kno.e.sis Center, Wright State University, Dayton, OH
2009 – 2012	Assistant Professor, Kno.e.sis Center, Computer Science & Engineering Department, Wright State University, Dayton, OH
2004 – 2009	Assistant Professor, AIFB, University of Karlsruhe (TH), Germany
Oct – Dec 2003	Research Associate, Department of Electrical Engineering and Computer Science, Case Western Reserve University, Cleveland, OH
2001 – 2004	Postdoctoral Researcher, Artificial Intelligence Institute, Computer Science Department, TU Dresden, Germany

5 Publications Related to the Proposal

- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, Foundations of Semantic Web Technologies. Textbooks in Computing, Chapman and Hall/CRC press, 2009. (Textbook for undergraduate and graduate teaching; *Outstanding Academic Title* of the American Library Association's Choice Magazine; Chinese translation in progress)
- Pascal Hitzler, Markus Krötzsch, Sebastian Rudolph, York Sure, Semantic Web. Grundlagen. Springer, 2008. (Textbook for undergraduate and graduate teaching)
- Steffen Hölldobler, Sebastian Bader, Bertram Föhner, Ursula Hans, Pascal Hitzler, Markus Krötzsch, Tobias Pietzsch, Logik und Logikprogrammierung Band 2: Aufgaben und Lösungen. Synchron Verlag, Heidelberg, 2011. (Textbook for undergraduate and graduate teaching)
- Pascal Hitzler, Anthony K. Seda, Mathematical Aspects of Logic Programming Semantics. Studies in Informatics, Chapman and Hall/CRC Press, 2010. (Research monograph for graduate teaching)
- Pascal Hitzler, Henrik Schärfe, Conceptual Structures in Practice. Studies in Informatics, Chapman and Hall/CRC Press, 2009. (Collection for graduate teaching)

5 Other Significant Publications

- Frederick Maier, Yue Ma, Pascal Hitzler, Paraconsistent OWL and Related Logics. Semantic Web journal. To appear.
- Markus Krötzsch, Sebastian Rudolph, Pascal Hitzler, Complexity of Horn Description Logics. ACM Transactions on Computational Logic 14 (1), 2013.
- Matthias Knorr, Jose Julio Alferes, Pascal Hitzler, Local Closed-World Reasoning with Description Logics under the Well-founded Semantics. Artificial Intelligence 175(9-10), 2011, 1528-1554.
- Sebastian Rudolph, Markus Krötzsch, Pascal Hitzler, Type-Elimination-Based Reasoning for the Description Logic SHIQbs Using Decision Diagrams and Disjunctive Datalog. Logical Methods in Computer Science 8(1:12), 2012.
- Jens Lehmann, Pascal Hitzler, Concept Learning in Description Logics Using Refinement Operators. Machine Learning Journal 78(1-2), 203-250, 2010.

Synergistic Activities (selection)

- 15 years of involvement in enhancement programs for highly skilled high-school students (in Germany). 10 summer schools and contests organized; lecturing (10 courses); publication of course material, reports, edited books (24 publications); setting of contest exercises; community service as treasurer and assistant treasurer for associations and as editorial board of a book series (in German) in this area.
- Journal involvement: Editor-in-chief of the IOS Press journal Semantic Web. Editorial board (5 journals). Journal reviewing (selection): ACM Trans. on Internet Tech., Data and Knowledge Engineering, Fund. Inf., IEEE Trans. on Neural Networks, Int. J. on Semantic Web and Inf. Systems, J. of Artificial Intelligence Research, J. of Automated Reasoning, J. of Logic and Computation, J. of the ACM, J. on Web Semantics,

Theory and Applications of Categories, Theory and Practice of Logic Programming, IEEE Trans. on Data and Knowledge Engineering.

- Reviewing: Project applications for NSF, for the Portuguese FCT, for the German DFG, for the Dutch NOW, for the Austrian FWF, for the Canadian NSERC, for the Chilean FONDECYT, and for INRIA, France. Book proposals and book manuscripts for Springer and CRC Press.
- Conference involvement: Steering Committee member (currently RR, ICCS); PC Chair (ODBASE2010, RR2010, AGI-09, ICCS06), General Chair (RR2012), Area Chair (ESWC2013, ESWC2011, ISWC2010, KI2009), Senior PC Member (AAAI-13, IJCAI-11, ISWC2012), Workshops/Tutorials Chair (K-CAP2013), Sponsor Chair (ISWC2013, ESWC2009, RR2009, ISWC2013). Ca. 22 workshops organized. PC member (selection): IJCAI-13, WWW2013, Hypertext 2013, PODS2013, WWW2012, ISWC2012, ECAI2012, AAAI-12, Hypertext2012, ICBO2012, ISWC2011, AAAI-11, WWW2011, IJCNN-11, ECAI2010, AAAI-10, ESWC2010, ISWC2009, IJCAI-09, IJCNN 2009.
- Participant in the W3C standardization working group “Web Ontology Language” (OWL). Co-author of the W3C Recommendation “OWL 2 Web Ontology Language: Primer”.

Collaborators and Co-Editors (excluding supervised students listed below): Jose Alferes (UN Lisboa), Artur d’Avila Garcez (City U. London), Gary Berg-Cross (SOCoP), Olivier Bodenreider (NLM), Francesco Calimeri (U. Calabria), Isabel Cruz (U. Chicago), E. Damiani (Milan U.), Mariana Damova (Ontotext), Dan Davenport (Lockheed-Martin), Mike Dean (BBN), T. Dillon (Curtin University), Guozhu Dong (Wright State U), Brigitte Endres-Niggemeyer (FH Hannover), Tim Finin (U. Maryland), Bertram Fronhöfer (TU Dresden), Mark Gahegan (U Auckland), Artur Garcez (City U. London), Birte Glimm (U. Oxford), Marco Gori (U. Siena), Ursula Hans (TU Dresden), Barbara Hammer (U Bielefeld), Frank van Harmelen (VU Amsterdam), Manfred Hauswirth (DERI), Cory Henson (Wright State U.), P. Herrero (U. Poly. Madrid), Andreas Herzig (U. Paul Sabatier), Steffen Hölldobler (TU Dresden), Ian Horrocks (U. Oxford), Hook Hua (NASA), Shasha Huang (Hunan U.), Prateek Jain (Wright State U.), Krzysztof Janowicz (U. Santa Barbara), Gudrun Kalmbach (U. Ulm), Werner Kuhn (U. Münster), Kai-Uwe Kühnberger (U. Osnabrück), A. Kumar (Penn State U), Luis Lamb (U. Fed. Rio Grande do Sul), Jens Lehmann (U. Leipzig), Naicong Li (SOCoP), Qingguo Li (Hunan U.), Zuoquan Lin (Peking U.), Chang Liu (Shanghai Jiaotong U.), Thomas Lukasiewicz (U. Oxford), Robert Meersman (VU. Brussels), Peter Mika (Yahoo! Research), Mukesh K. Mohania (IBM India), Philip Murphy (U Redlands), Bryce Nordgren (USDA Forest Service), Leo Obrst (MITRE), B.C. Ooi (U. Singapore), Günter Palm (U. Ulm), Jeff Z. Pan (U. Aberdeen), Yue Pan (IBM), Bijan Parsia (U. Manchester), Peter Patel-Schneider (Bell Labs), Tobias Pietzsch (TU Dresden), Guilin Qi (Southeast U.), L. Qing (City U Hong Kong), M. Reichert (U. Ulm), Satya S. Sahoo (CWRU), Simon Scheider (U Münster), Mark Schildhauer (U Santa Barbara), D.C. Schmidt (SEI), Anthony K. Seda (UC Cork), Amit P. Sheth (Wright State U.), Krishna Sinha (Virginia Tech), Krishnaprasad Thirunarajan (Wright State U.), Hector Perez-Urbina (Clark & Parsia), Anne Thessen (Marine Bio Lab), Charles Vardeman (U Notre Dame), Raymonrod G. Vasquez (Accenture), Kunal Verma (Accenture), Jules White (Virginia Tech), Nancy Wiegand (U Wisconsin-Madison), Guohui Xiao (Peking U.), Peter Z. Yeh (Accenture), Valentin Zacharias (FZI Karlsruhe), Ilya Zaslavsky (San Diego Supercomputer Center), Guo-Qiang Zhang (Case Western Reserve U.), Lei Zhang (IBM), Zhangquan Zhou (Southeast U.)

Graduate Advisors and Postdoctoral Sponsors: Steffen Hölldobler (TU Dresden), Anthony K. Seda (National U. of Ireland Cork), Helmut Salzmann (U. Tübingen), Rudi Studer (U. Karlsruhe), Guo-Qiang Zhang (Case Western Reserve U.)

PhD Thesis Advisor and Postgraduate-Scholar Sponsor: Sebastian Bader (U. Rostock), David Carral Martinez (Wright State U), Michelle Cheatham (Wright State U), Stephan Grimm (U. Karlsruhe), Amit Joshi (Wright State U.) Matthias Knorr (UN Lisboa), Adila A. Krisnadi (Wright State U.), Markus Krötzsch (U. Oxford), Yue Ma (TU Dresden), Frederick Maier (Wright State U.), Raghava Mutharaju (Wright State U.), Guilin Qi (Southeast U.), Sebastian Rudolph (U. Karlsruhe), Stella Sam (Wright State U), Kunal Sengupta (Wright State U.), Tuvshintur Tserendorj (U. Karlsruhe), Cong Wang (Wright State U.) (14 graduates, 3 postdocs)

Michael Kifer

Education

1985 The Hebrew University of Jerusalem, Israel Ph.D. in Computer Science
1976 Moscow State University, Moscow, Russia M.S. in Mathematics

Employment

1996 – present Professor, Dept of Computer Science, SUNY at Stony Brook
1989 – 1996 Associate Professor, Dept. Computer Science, SUNY at Stony Brook
1991 – 1992 Visiting Associate Professor, Dept. Computer Science, University of Toronto
1984 – 1989 Assistant Professor, Dept of Computer Science, SUNY at Stony Brook

Selected Professional Activities

Associations (current): President of the Rules and Reasoning Association (since 2012).
Editorial Board Member (current): Since 2006: *Journal on Data Semantics*, Springer Verlag.
Since 2003: *Web Semantics: Science, Services and Agents on the World Wide Web*, Elsevier Science Publ.; Since 1993: *Journal of Intelligent Information Systems*, Kluwer Academic Publishers; Since 2000: *Theory and Practice of Logic Programming*, Cambridge University Press.
Conference chair (recent): *3-d International Conference on Web Reasoning and Rule Systems (RR-2009)*, Chantilly, VA, October 2009.
Guest editor (recent): Special issue of *Fundamenta Informaticae on Rules and Rule Markup Languages for the Semantic Web*, 2007 (with T. Eiter and E. Franconi).
Program chair (recent): *4th European Semantic Web Conference (ESWC2007)*, June 2007.
Program committee membership (recent): *ACM SIGACT-SIGMOD-SIGART Symposium on Principles of Database Systems (PODS)*, June 2009, Providence, RI. *International Symposium on Practical Aspects of Declarative Languages (PADL'09)*, January 2009, Savanna, GA. *Intl. Semantic Web Conference*, Oct. 2008, Karlsruhe, Germany. *Intl. Conference on Scalable Uncertainty Management*, 2007, Washington, DC. *PODS 2006. AAI 2006, 2013.*

Recent awards

- 2008 SUNY Chancellor's Award for Scholarship and Creative Activities.
- 2006 Plumer Visiting Research Fellowship, St. Anne's College, Oxford University, U.K.
- 2002 ACM-SIGMOD Test of Time Award for the 1992 SIGMOD publication that had most impact in the last 10 years.
- 1999 ACM-SIGMOD Test of Time Award for the 1989 SIGMOD publication that had most impact in the last 10 years.

Publications. Dr. Kifer is an author of over 100 refereed publications. He also co-wrote and edited 7 books. The following is a list of publications most relevant to the proposed project.

Five most relevant recent publications:

1. A. Cali, G. Gottlob, M. Kifer, "Taming the Infinite Chase: Query Answering under Expressive Relational Constraints," *Journal of Artificial Intelligence Research (JAIR)*, 2013, to appear.

2. M. Rezk, M. Kifer, “*Transaction Logic with Partially Defined Actions*,” Journal on Data Semantics, 2012.
3. S. Liang, P. Fodor, H. Wan, M. Kifer, “*OpenRuleBench: An Analysis of the Performance of Rule Engines*,” 18-th International World Wide Web Conference (WWW2009), 2009.
4. D. Roman and M. Kifer, “*Semantic Web Service Choreography: Contracting and Enactment*.” International Semantic Web Conference (ISWC), October 2008, Karlsruhe, Germany.
5. M. Kifer, G. Lausen, J. Wu, “*Logical foundations of object-oriented and frame-based languages*,” J. of ACM, July 1995, pp. 741–843.

Five other recent publications:

1. S. Liang and M. Kifer, “*Terminyzer: An Automatic Non-Termination Analyzer for Large Logic Programs*.” Fifteenth International Symposium on Practical Aspects of Declarative Languages (PADL’13), January 21-22, 2013. Rome, Italy.
2. S. Liang and M. Kifer, “*Deriving Predicate Statistics for Logic Rules*.” The 6th International Conference on Web Reasoning and Rule Systems (RR-2012). Vienna, Austria, September 2012. Springer Verlag.
3. M. Balaban and M. Kifer, “*Logic-based Model Level Software Development with F-OML*.” MODELS 2011, October 2011, Wellington, New Zealand.
4. H. Wan and M. Kifer, “*Belief Logic Programming: Uncertainty Reasoning with Correlation of Evidence*,” Intl. Conference on Logic Programming and Nonmonotonic Reasoning (LPNMR-2009), September 2009.
5. H. Wan, B. Grosf, M. Kifer, P. Fodor, S. Liang, “*Logic Programming with Defaults and Argumentation Theories*,” 25th International Conference on Logic Programming (ICLP 2009), July 2009.

Collaborators in the past 48 months: Prof I.V. Ramakrishnan (Stony Brook), Prof. C.R. Ramakrishnan (Stony Brook), Prof. S. Swaminathan (BNL), Dr. G. Yang (Facebook), Dr. S. Mukherjee (Siemens Research, US), Dr. H. Boley (NRC, Canada), Prof. D. Fensel (STI, Austria), J. de Bruijn (U. Bolzano, Italy), Prof. P.M. Lewis (Stony Brook), Prof. Art Bernstein (Stony Brook), Prof. Y. Liu (Stony Brook), Dr. Cali (Univ. of Bolzano, Italy), Dr. V. Chaudhari (SRI), Dr. A. Polleres (DERI Innsbruck), Dr. B. Grosf (MIT), Dr. D. Roman (SINTEF, Norway), Prof. G. Gottlob (Oxford).

Graduate advisors: Prof. Catriel Beeri (Hebrew Univ. of Jerusalem, Israel).

Ph.D. students graduated: Martin Rezk (Univ. Bolzano, Italy), Paul Fodor (Stony Brook), Hui Wan (IBM T.J. Watson), Dumitru Roman (SINTEF, Norway), Chang Zhao, Saikat Mukherjee (Siemens Research), Guizhen Yang (Facebook), Hasan Davulcu (Arizona State Univ.), James Wu (Broadvision), Kien-Chung Kuo (AT&T), Y.-H. Sheng (IBM), T. Krishnaprasad (Wright State University).

Marco Maratea

Education

2005 University of Genova, Italy Ph.D.
2001 University of Genova, Italy M.S. Computer Engineering

Employment

2010 – Assistant Professor, Faculty of Engineering/Polytechnic School, University of Genova, Italy
2007-2010 – Post-Doctoral Researcher, Faculty of Engineering, University of Genova, Italy
2005-2006 – Post-Doctoral Researcher, Department of Mathematics, University of Calabria, Italy

Selected Professional Activities

International Workshop chair: *RCRA 2013 International Workshop on "Experimental Evaluation of Algorithms for solving problems with combinatorial explosion"*, Rome, Italy, 14-15 June 2013.

Organizing committee: *14th International Conference on Principles of Knowledge Representation and Reasoning (KR 2014)*, Vienna, Austria, 20-24 July 2014; *7th International Conference on Web Reasoning and Rule Systems (RR2013)*, & *9th Reasoning Web Summer School (RW2013)*, Mannheim, Germany, July-August 2013; *6th International Conference on Web Reasoning and Rule Systems (RR2012)*, & *8th Reasoning Web Summer School (RW2012)*, Vienna, Austria, September 2012.

Program committee membership (recent): *23rd International Conference on Artificial Intelligence (IJCAI2013)*; *26th Conference on Artificial Intelligence (AAAI2012)*; *13th International Conference on Principles of Knowledge Representation and Reasoning*; *27th International Conference on Logic Programming (ICLP 2011)*.

Recent awards. Best paper award: 10th International Congress of the Italian Association for Artificial Intelligence (AI*IA 2007), Rome, Italy, September 2007.

Publications. Dr. Maratea is an author of over 40 refereed publications in international conferences and journals. The following is a list of publications most relevant to the proposed project.

Five most relevant recent publications:

1. A. Armando, E. Giunchiglia, M. Maratea, S.E. Ponta - An Action-based Approach to the Formal Specification and Automated Analysis of Business Processes under Authorization Constraints. *Journal of Computer and Systems Sciences*, Special issue on Knowledge Representation and Reasoning, Vol. 78(1), pg. 119-141, 2012.
2. E. Di Rosa, E. Giunchiglia, M. Maratea - Solving Satisfiability Problems with Preferences Constraints: Special issue on Constraint-based approaches to preference modelling and reasoning. Vol. 15(4), pg. 485-515, 2010.
3. M. Maratea, F. Ricca, W. Faber, N. Leone - Look-Back Techniques and Heuristics in DLV: Implementation, Evaluation and Comparison to QBF Solvers. *Journal of Algorithms*. Vol. 63(1-3), pg. 70-89, 2008.
4. E. Giunchiglia, Yu. Lierler, M. Maratea - Answer Set Programming based on Propositional Satisfiability. *Journal of Automated Reasoning*. Vol. 36(4), pg. 345-377, 2006.

5. A. Armando, C. Castellini, E. Giunchiglia, M. Maratea - The SAT-based Approach to Separation Logic. *Journal of Automated Reasoning*. Vol. 35(1-3), pg. 237-263, 2005.

Five other recent publications:

1. M. Maratea - Planning as Satisfiability with IPC Simple Preferences and Action Costs. *AI Communications*. Vol 25(4), pg. 343-360, 2012.
2. M. Maratea, L. Pulina - Solving Disjunctive Temporal Problems with Preferences using Maximum Satisfiability. *AI Communications*. Vol 25(2), pg. 137-156, 2012.
3. M. Maratea, L. Pulina, F. Ricca - The Multi-Engine ASP solver ME-ASP. *Proc. of the 13th European Conference on Logics in Artificial Intelligence (JELIA 2012)*. LNCS 7519, pg. 484-487, 2012.
4. E. Giunchiglia, M. Maratea - Algorithms for Solving Satisfiability Problems with Qualitative Preferences. *Correct Reasoning - Essays on Logic-Based AI in Honour of Vladimir Lifschitz*. LNCS 7265, pg. 327-344, 2012.
5. W. Faber, N. Leone, M. Maratea, F. Ricca - Look-back Techniques for ASP Programs with Aggregates. *Fundamenta Informaticae*. Vol. 107(4), pg. 379-413, 2011.

Synergistic Activities (selection)

- Journal Reviewing: *ACM Transactions on Information Systems and Technology*; *Journal of Artificial Intelligence Research*; *Artificial Intelligence*; *Neural Processing Letters*; *Information and Computation Journal*; *Theory and Practice of Logic Programming Journal*; *Annals of Mathematics and Artificial Intelligence*; *Constraints*; *AI Communications*; *Information Processing Letters*; *Journal of Logic and Computation*.
- Seminars (by invitation): Department of Computer Science, University of L'Aquila, L'Aquila, Italy. April 2008; Department of Mathematics, University of Calabria, Cosenza. Italy. November 2007; Department of Fisics, Section of "Computer Science", University of Naples "Federico II", Naples, Italy. June 2005; Dagstuhl Seminar 05171: Nonmonotonic Reasoning, Answer Set Programming and Constraints, Dagstuhl, Germany, EU. April 2005; Combination of Decision Procedures Summer School, SRI International, Menlo Park, CA, US. August 2004; Kestrel Institute, Palo Alto, CA, US. August 2004; SRI International, Menlo Park, CA, US. April 2004.
- Visiting periods: Nato Undersee Research Centre, LaSpezia, Italy. EU (July 2008 - October 2008); Computer Science Department, Stanford University, CA. US (February 2004 - May 2004); Computer Science Department, University of Texas at Austin, TX, US (January 2003 - April 2003).
- Memberships: Italian Association for Artificial Intelligence (AI*IA); Working group on Knowledge Representation and Automated Reasoning (RCRA); Italian Association for Logic Programming (GULP).

Graduate advisor Prof. Enrico Giunchiglia (Univesity of Genova)

Alessandra Mileo, Digital Enterprise Research Institute (DERI), NUI Galway,
http://www.deri.ie/about/team/member/alessandra_mileo, alessandra.mileo@deri.org

Professional Preparation

Univ. Statale di Milano	Italy	Informatics	Diplom	2002
Univ. Statale di Milano	Italy	Computer Science	PhD	2006
Univ. degli Studi di Milano-Bicocca	Italy	Sociology	Master	2007

Appointments

- 2010 – Post-doctoral Researcher and Unit Leader, Digital Enterprise Research Institute, NUI Galway, Galway, Ireland
- 2009 – 2010 Post-doctoral Researcher, Department of Informatics, Systems and Communication, University of Milano-Bicocca, Milano, Italy
- 2007 – 2008 Post-doctoral Researcher, NOMADIS, Department of Informatics, Systems and Communication, University of Milano-Bicocca, Milano, Italy

5 Publications Related to the Proposal

- [Nuno Lopes](#), Sabrina Kirrane, [Antoine Zimmermann](#), [Axel Polleres](#), [Alessandra Mileo](#): A Logic Programming approach for Access Control over RDF. [ICLP \(Technical Communications\) 2012](#): 381-392
- Muhammad Intizar Ali, [Nuno Lopes](#), [Owen Friel](#), [Alessandra Mileo](#): Update Semantics for Interoperability among XML, RDF and RDB - A Case Study of Semantic Presence in CISCO's Unified Presence Systems. [APWeb 2013](#): 43-50
- [Anca Dumitrache](#), Alessandra Mileo, [Antoine Zimmermann](#), [Axel Polleres](#), [Philipp Obermeier](#), [Owen Friel](#): Enabling Privacy-Preserving Semantic Presence in Instant Messaging Systems. In Proc. of [CONTEXT 2011](#), Springer LNCS vol. 6967, pp. 82-96, Karlsruhe, Germany 2011.
- Alessandra Mileo, Torsten Schaub, Davide Merico, Roberto Bisiani, "Knowledge-Based Multi-Criteria Optimization to Support Indoor Positioning", Special Issue on Annals of Mathematics and Artificial Intelligence, Springer, Ref.: Ms. No. AMAI-D-10-00054R.
- Alessandra Mileo, Michael Fink, "Logic-based Interpretation of Contexts: Modeling and Applications", 2nd International Workshop, Log-IC11, Vancouver, Canada, May 2011. CEUR Workshop Proceedings, ISSN 1613-0073, Vol-738, www.CEUR-WS.org

5 Other Significant Publications

- Alessandra Mileo, Davide Merico, Roberto Bisiani, "Reasoning Support for Risk Prediction and Prevention in Assisted Living", Special Issue on Transaction on Theory and Practice of Logic Programming, TPLP 11(2-3): 361-395 (2011). Cambridge University Press
- Alessandra Mileo, Davide Merico, Roberto Bisiani, "Support for Context-aware monitoring in Home Healthcare". Journal of Ambient Intelligence and Smart Environments (JAISE). Thematic Issue on "Computational Modeling of Human-Oriented Knowledge in Ambient Intelligence", ISSN: 1876-1364, 2(1): pp. 49-66 (2010). IOS Press.
- Alessandra Mileo, James P. Delgrande, "Logic-based Interpretation of Contexts: Modeling and Applications", 1st International Workshop, Log-IC09, Potsdam, Germany, September 2009. CEUR Workshop Proceedings, ISSN 1613-0073, Vol-550, www.CEUR-WS.org
- Davide Merico, Alessandra Mileo, Roberto Bisiani, "Intelligent Wireless Sensor Networks for Assisted Living", Research Report on Emerging Paradigms in Informatics, Systems and Communication, University of Milano Bicocca, pp. 35-40. Ed. Starrylink 2009.
- Alessandra Mileo, [Torsten Schaub](#), "Qualitative Constraint Enforcement in Advanced Policy Specification". In Proc. of [9th European Conference on Symbolic and Quantitative Approaches to Reasoning with Uncertainty \(ECSQARU 2007\)](#), Springer LNAI vol. 4724, pp. 695-706, Tunisia, November 2007.

Synergistic Activities (selection)

- Journal Reviewing: Theory and Practice of Logic Programming (TPLP) Special Issue on ICLP2008/2010/2011, Annals of Mathematics and Artificial Intelligence (AMAI) Special Issue on RCRA2010, Journal of Web Semantics (JWS) Special Issue on ARCOE2011
- Conference/Workshop/Schools involvement: Chair of the 1st and 2nd Workshop on Logic-based Interpretation of Contexts: Modeling and Application, published by CEUR-WS.ORG; Local organizer and reviewer of the 5th International Conference on Reasoning and Rule Systems and the co-located Reasoning Web Summer School (RW2011); PC member of Int'l Semantic Web Conference (ISWC) 2011, Int'l Joint Conference on Artificial Intelligence (IJCAI) 2011, International Conference on Automated Planning and Scheduling (ICAPS) 2011, International Conference on Applications of Declarative Programming and Knowledge Management (INAP) 2011, Int'l Conference on Logic Programming (ICLP) 2011/2010, Mexican Int's Conference on Artificial Intelligence (MICAI) 2010, Int'l Workshop on Modeling and Reasoning in Context (MRC) 2011, Automated Reasoning about Context and Ontology Evolution (ARCOE) 2011, Workshop on Logic Programming (WLP) 2011, International Conference on Indoor Positioning and Indoor Navigation (IPIN) 2010, Convegno Italiano di Logica Computazionale (CILC) 2010, Workshop on Experimental evaluation of algorithms for solving problems with combinatorial explosion (RCRA) 2010; Invited lecturer at the 1st International Summer School on Ageing Society and Technologies: Systems, Theories, Practice, Ascoli Piceno, Italy, September 2010; panelist
- Seminars (by invitation): Dagstuhl 05171 on Nonmonotonic Reasoning, Answer Set Programming and Constraints (2005); Dagstuhl 04271 on Preferences: Specification, Inference, Applications
- Visiting periods: Visiting Researcher at Simon Fraser University, Vancouver, Canada (July 2009), Visiting Researcher at the University of Potsdam, Berlin, Germany (November 2005, October 2006, November 2007, September 2008, March 2009, April 2011)
- Memberships: Member of the COST Action on Agreement Technologies (IC0801, WG1, WG5), Member of the Italian AI Association (AI*IA), Member of the working group on Knowledge Representation and Automated Reasoning (RCRA), member of the Steering Committee of the Reasoning and Rule Systems Association (RR) since 2012.

Collaborators and Co-Editors (excluding supervised students listed below):

University of Milano-Bicocca, Italy: Roberto Bisiani, Davide Merico, Stefano Pinardi;
University of Potsdam, Berlin, Germany: Torsten Schaub, Orkunt Sabuncu; TU Wien, Vienna, Austria: Thomas Krenwallner, Peter Schueller; University of Bath, UK: Julian Padget, Marina de Vos (University of Bath, UK); Digital Enterprise Research Institute: Axel Polleres, Aidan Hoegan, Manfred Hauswirth, Helena Deus, Nuno Lopes, Stefan Bischof, Juergen Umbrich, Dahn Le Phuoc, Alexandre Passant. Co-Editors: Michael Fink (TUW, Vienna, Austria), James Delgrande (SFU, Vancouver, Canada)

Graduate Advisors and Postdoctoral Sponsors:

Elisa Bertino (Purdue University, Indiana, US), Roberto Bisiani (Univ. of Milano-Bicocca, Milano, Italy), Torsten Schaub (Potsdam, Berlin), Axel Polleres (DERI, NUI Galway, Ireland; Siemens Vienna, Austria), Stefan Decker (DERI, NUI Galway, Ireland), Manfred Hauswirth (DERI, NUI Galway, Ireland)

Master or PhD Thesis Advisor and Postgraduate-Scholar Sponsor: Philipp Obermeier (DERI), Sabrina Kirrane (DERI), Owen Sacco (DERI)

SUMMARY PROPOSAL BUDGET

YEAR 1

ORGANIZATION University of California-Santa Barbara				FOR NSF USE ONLY			
				PROPOSAL NO.	DURATION (months)		
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR Krzysztof Janowicz				AWARD NO.	Proposed	Granted	
				A. SENIOR PERSONNEL: PI/PI, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)			
				CAL	ACAD	SUMR	
1.	Pascal Hitzler - none			0.00	0.00	0.00	0
2.	Michael Kifer - none			0.00	0.00	0.00	0
3.	Marco Maratea - none			0.00	0.00	0.00	0
4.	Alessandra Mileo - none			0.00	0.00	0.00	0
5.							
6.	(0) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)			0.00	0.00	0.00	0
7.	(4) TOTAL SENIOR PERSONNEL (1 - 6)			0.00	0.00	0.00	0
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)							
1.	(0) POST DOCTORAL SCHOLARS			0.00	0.00	0.00	0
2.	(0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)			0.00	0.00	0.00	0
3.	(0) GRADUATE STUDENTS						0
4.	(0) UNDERGRADUATE STUDENTS						0
5.	(0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)						0
6.	(0) OTHER						0
TOTAL SALARIES AND WAGES (A + B)							0
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)							0
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)							0
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)							
TOTAL EQUIPMENT							0
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)							0
2. FOREIGN							0
F. PARTICIPANT SUPPORT COSTS							
1.	STIPENDS \$ _____	9,000					
2.	TRAVEL _____	0					
3.	SUBSISTENCE _____	0					
4.	OTHER _____	0					
TOTAL NUMBER OF PARTICIPANTS (6)							
TOTAL PARTICIPANT COSTS							9,000
G. OTHER DIRECT COSTS							
1.	MATERIALS AND SUPPLIES						0
2.	PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION						0
3.	CONSULTANT SERVICES						0
4.	COMPUTER SERVICES						0
5.	SUBAWARDS						0
6.	OTHER						0
TOTAL OTHER DIRECT COSTS							0
H. TOTAL DIRECT COSTS (A THROUGH G)							9,000
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) MTDC (Rate: 53.0000, Base: 0)							
TOTAL INDIRECT COSTS (F&A)							0
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)							9,000
K. RESIDUAL FUNDS							0
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)							9,000
M. COST SHARING PROPOSED LEVEL \$ 0				AGREED LEVEL IF DIFFERENT \$			
PI/PI NAME Krzysztof Janowicz				FOR NSF USE ONLY			
ORG. REP. NAME* Alexa Greco				INDIRECT COST RATE VERIFICATION			
		Date Checked		Date Of Rate Sheet		Initials - ORG	

SUMMARY PROPOSAL BUDGET Cumulative

ORGANIZATION University of California-Santa Barbara				FOR NSF USE ONLY			
				PROPOSAL NO.	DURATION (months)		
PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR Krzysztof Janowicz				AWARD NO.	Proposed	Granted	
A. SENIOR PERSONNEL: PI/PI, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)				NSF Funded Person-months		Funds Requested By proposer	Funds granted by NSF (if different)
		CAL	ACAD	SUMR			
1.	Pascal Hitzler - none	0.00	0.00	0.00		0	
2.	Michael Kifer - none	0.00	0.00	0.00		0	
3.	Marco Maratea - none	0.00	0.00	0.00		0	
4.	Alessandra Mileo - none	0.00	0.00	0.00		0	
5.							
6.	() OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00		0	
7.	(4) TOTAL SENIOR PERSONNEL (1 - 6)	0.00	0.00	0.00		0	
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)							
1.	(0) POST DOCTORAL SCHOLARS	0.00	0.00	0.00		0	
2.	(0) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00		0	
3.	(0) GRADUATE STUDENTS					0	
4.	(0) UNDERGRADUATE STUDENTS					0	
5.	(0) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)					0	
6.	(0) OTHER					0	
TOTAL SALARIES AND WAGES (A + B)						0	
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)						0	
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)						0	
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING \$5,000.)							
TOTAL EQUIPMENT						0	
E. TRAVEL 1. DOMESTIC (INCL. CANADA, MEXICO AND U.S. POSSESSIONS)						0	
2. FOREIGN						0	
F. PARTICIPANT SUPPORT COSTS							
1.	STIPENDS \$ <u> 9,000</u>						
2.	TRAVEL <u> 0</u>						
3.	SUBSISTENCE <u> 0</u>						
4.	OTHER <u> 0</u>						
TOTAL NUMBER OF PARTICIPANTS (6)				TOTAL PARTICIPANT COSTS		9,000	
G. OTHER DIRECT COSTS							
1. MATERIALS AND SUPPLIES						0	
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION						0	
3. CONSULTANT SERVICES						0	
4. COMPUTER SERVICES						0	
5. SUBAWARDS						0	
6. OTHER						0	
TOTAL OTHER DIRECT COSTS						0	
H. TOTAL DIRECT COSTS (A THROUGH G)						9,000	
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)							
TOTAL INDIRECT COSTS (F&A)						0	
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)						9,000	
K. RESIDUAL FUNDS						0	
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)						9,000	
M. COST SHARING PROPOSED LEVEL \$ 0				AGREED LEVEL IF DIFFERENT \$			
PI/PI NAME Krzysztof Janowicz				FOR NSF USE ONLY			
ORG. REP. NAME* Alexa Greco				INDIRECT COST RATE VERIFICATION			
		Date Checked	Date Of Rate Sheet	Initials - ORG			

C *ELECTRONIC SIGNATURES REQUIRED FOR REVISED BUDGET

Budget Statement

The total project budget amounts to \$9,000. This translates into 6 student stipends of \$1,500 to cover the travel and accommodation costs of the students to visit the RR 2013 conference.

Investigator: Krzysztof Janowicz
Support: Current
Project/Proposal Title: Geospatial Feature Conflation: Conceptual, Statistical, and Optimization Approaches
Principal Investigators: Goodchild, Janowicz
Award Number: HM1582-10-1-0007
Source of Support: National Geospatial-Intelligence Agency
Total Award Amount: 422,934.00 Total Award Period Covered: 10/16/2009-10/15/2013
Location of Project: UCSB
Person Months Per Year Committed to the Project: Cal: 0.00 Acad: 0.27 Sumr: 0.00

Investigator: Krzysztof Janowicz
Support: Pending
Project/Proposal Title: CIF21 DIBBs: Cross-Domain Observational METadata Network (X-DOME Network)
Principal Investigators: Janowicz
Proposal Number: 20130176
Source of Support: Woods Hole Oceanographic Institution
Total Proposal Amount: 73,426.00 Total Award Period Covered: 4/1/2013-3/31/2016
Location of Project: UCSB
Person Months Per Year Committed to the Project: Cal: 0.00 Acad: 0.18 Sumr: 1.00

Investigator: Krzysztof Janowicz
Support: Pending
Project/Proposal Title: Representing and Reasoning about Temporally Scoped Gazetteer Data
Principal Investigators: Janowicz
Proposal Number: 20130791
Source of Support: DIRECTOR OF CENTRAL INTELLIGENCE
Total Proposal Amount: 358,853.00 Total Award Period Covered: 5/1/2013-4/30/2016
Location of Project: UCSB
Person Months Per Year Committed to the Project: Cal: 0.00 Acad: 0.45 Sumr: 0.50

Investigator: Krzysztof Janowicz
Support: Pending
Project/Proposal Title: Student Travel Fellowships: 2013 Web Reasoning and Rule Systems Conference (this proposal)
Principal Investigators: Janowicz
Proposal Number: 2012
Source of Support: National Science Foundation
Total Proposal Amount: 9,000.00 Total Award Period Covered: 7/1/2013-12/31/2013
Location of Project: UCSB
Person Months Per Year Committed to the Project: Cal: 0.00 Acad: 0.09 Sumr: 0.00

Investigator: Krzysztof Janowicz
Support: Pending
Project/Proposal Title: EarthCube Building Blocks: Data-Fridge
Principal Investigators: Janowicz
Proposal Number: 2013
Source of Support: National Science Foundation
Total Proposal Amount: 808,576.00 Total Award Period Covered: 1/1/2014-12/31/2015
Location of Project: UCSB
Person Months Per Year Committed to the Project: Cal: 0.00 Acad: 0.45 Sumr: 1.00

Investigator: Krzysztof Janowicz
Support: Pending
Project/Proposal Title: EarthCube RCN: ESN – EarthCube Semantics Network
Principal Investigators: Fox, Finin, Hitzler, Janowicz, Schildhauer
Proposal Number:
Source of Support: National Science Foundation
Total Proposal Amount: 300,000.00 Total Award Period Covered: 9/1/2013-8/31/2015
Location of Project: Rensselaer Polytechnic Institute (Fox)
Person Months Per Year Committed to the Project: Cal: 0.00 Acad: 0.18 Sumr: 0.00

Current and Pending Support

Investigator: Pascal Hitzler

Support: Current

Project/Proposal Title: III: Small: TROn – Tractable Reasoning with Ontologies

Source of Support: National Science Foundation

Total Award Amount: \$475,223

Total Award Period Covered: 09/01/10 – 08/31/14

Location of Project: Wright State University

Person-Months Per Year Committed to the Project: Cal: 0 Acad: 0 Sumr: 1

Support: Current

Project/Proposal Title: III: EAGER – Expressive Scalable Querying over Integrated Linked Open Data

Source of Support: National Science Foundation

Total Award Amount: \$141,828

Total Award Period Covered: 09/01/11 – 08/32/13

Location of Project: Wright State University

Person-Months Per Year Committed to the Project: Cal: 0 Acad: 0 Sumr: 1

Support: Current

Project/Proposal Title: ImproMat – Improving the Retention Rate of Computer Science Students which
are Underprepared in Mathematics

Source of Support: Wright State University Teaching Innovation Award

Total Award Amount: \$6,000

Total Award Period Covered: 06/01/12 – 05/31/13

Location of Project: Wright State University

Person-Months Per Year Committed to the Project: Cal: 0 Acad: 0 Sumr: 0.4

Support: Current

Project/Proposal Title: SEJP – Semantically-enabled Journal Portals

Source of Support: IOS Press

Total Award Amount: \$44,210

Total Award Period Covered: 12/01/12 – 12/31/13

Location of Project: University of California, Santa Barbara

Person-Months Per Year Committed to the Project: Cal: 0 Acad: 0 Sumr: 0

Support: Current

Project/Proposal Title: ICCL Summer School 2013: Semantic Web – Ontology Languages and Their Use

Source of Support: German Academic Exchange Service (DAAD)

Total Award Amount: \$32,468

Total Award Period Covered: 01/01/13 – 09/30/13

Location of Project: TU Dresden, Germany

Person-Months Per Year Committed to the Project: Cal: 0 Acad: 0 Sumr: 0

Support: Current

Project/Proposal Title: ERRO – Efficient Reasoning with Rules and Ontologies

Source of Support: FCT Portugal

Total Award Amount: \$182,303

Total Award Period Covered: 01/01/12 – 12/31/14

Location of Project: Universidade Nova de Lisboa, Portugal

Person-Months Per Year Committed to the Project: Cal: 0 Acad: 0 Sumr: 0

Support: Pending
Project/Proposal Title: EarthCube RCN: ESN – EarthCube Semantic Network
Source of Support: National Science Foundation
Total Award Amount: \$300,000
Total Award Period Covered: 09/01/13 – 08/31/15
Location of Project: Rensselaer Polytechnic Institute
Person-Months Per Year Committed to the Project: Cal: 0 Acad: 0 Sumr: 0

Support: Pending
Project/Proposal Title: EarthCube Building Blocks: Data Fridge
Source of Support: National Science Foundation
Total Award Amount: \$808,576
Total Award Period Covered: 01/01/14 – 12/31/15
Location of Project: University of California, Santa Barbara
Person-Months Per Year Committed to the Project: Cal: 0 Acad: 0 Sumr: 1

Support: Pending
Project/Proposal Title: EarthCube Building Blocks: EarthCube Central (EC2): Leveraging Semantics
And Crowdsourcing in Data Sharing and Discovery
Source of Support: National Science Foundation
Total Award Amount: \$1,135,089
Total Award Period Covered: 09/01/13 – 08/31/15
Location of Project: University of Maryland, Baltimore County
Person-Months Per Year Committed to the Project: Cal: 0 Acad: 0 Sumr: 1

Support: Pending
Project/Proposal Title: SCH: EXP: Collaborative Research: MED QUESTION – Medical Querying Using
Extensions of Semantic Trajectories Involving Ontologies
Source of Support: National Science Foundation
Total Award Amount: \$300,260
Total Award Period Covered: 02/01/14 – 01/31/16
Location of Project: Wright State University
Person-Months Per Year Committed to the Project: Cal: 0 Acad: 0 Sumr: 1

Support: Pending
Project/Proposal Title: Student Travel Fellowships: 2013 Web Reasoning and Rule Systems Conference
(this proposal)
Source of Support: National Science Foundation
Total Award Amount: \$9,000
Total Award Period Covered: 07/01/13 – 12/31/13
Location of Project: University of California, Santa Barbara
Person-Months Per Year Committed to the Project: Cal: 0 Acad: 0 Sumr: 0

Support:
Project/Proposal Title:
Source of Support:
Total Award Amount:
Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

Michael Kifer: Current and Pending Support

Current

- Performance Analysis and Optimization for Logic Rule Engines, \$807,991. NSF, 2010–2014 (PI with two co-PIs). Person-months: 1 summer/0 acad/year.
- Design for the SILK Advanced Rule Engine, Phase 5, \$281,130. Vulcan Inc., 2012–2013 (PI). Person-months: 2 summers/0 acad/year.

Pending

- Design for the SILK Advanced Rule Engine, Phase 6, \$51,666. Vulcan Inc., 2013 (PI). Person-months: 0/0/year.
- This proposal

Investigator: Marco Maratea
Support: Pending
Project/Proposal Title: Student Travel Fellowships: 2013 Web Reasoning and Rule Systems
Conference (this proposal)
Principal Investigators: Janowicz
Proposal Number: 2012
Source of Support: National Science Foundation
Total Proposal Amount: 9,000.00 Total Award Period Covered: 7/1/2013-12/31/2013
Location of Project: UCSB
Person Months Per Year Committed to the Project: Cal: 0.00 Acad: 0.09 Sumr: 0.00

Alessandra Mileo Current and Pending Support

Current Support

Title: CityPulse - Real-Time IoT Stream Processing and Large-scale Data Analytics for smart City Applications

Source: EU FP7

Award: 359.000 Euros

Period: 01/09/2013 - 30/09/2016

Location of Project: DERI, National university of Ireland Galway

Person-Months per Year committed to the project: 3.0

Pending Support

Title: IRCSET Postdoctoral Fellowship

Source: Enterprise Ireland

Award: 100.000 euros

Period: 01/01/2014 - 01/01/2016

Location of Project: DERI, National University of Ireland Galway

Person-Months per Year committed to the project: 1.0

Facilities, Equipment, and Other Resources

UC Santa Barbara

The **Center for Spatial Studies** (spatial@ucsb) will house the *Data Fridge* project at the University of California, Santa Barbara. It will provide office, administrative, computational, web-server, and intellectual support for implementing, testing, and disseminating all of the research projects and other activities supported by the center.

[Spatial@ucsb](mailto:spatial@ucsb) occupies 1,700 assignable square feet in Phelps Hall, providing 14 fully-equipped work stations for staff, graduate researchers, and visiting scholars; four additional offices that support up to 8 researchers and visitors in Ellison Hall; and a separate spatial@ucsb computing lab (SCL). SCL has 15 high-end computers devoted to research, nine equipped with dual monitors to enhance spatially related visualization. These workstations have access to a broad range of software for geospatial analysis and graphic visualization of data. The center maintains a web/data server to support user traffic demands associated with projects. Both virtual and in-house facilities easily accommodate meetings and workshops for educational purposes and research collaboration. A 16-core DELL server with 32 GB memory and 4.0 TB RAID5 HDD is provided for the virtualization of project servers. The involved labs, e.g., Roberts' VIPER and Bookhagen's GEOMORPH labs offer additional hardware and software resources. For example, co-PI Roberts has personal access to three Linux servers and three Windows 2008 R2 servers with physical memory ranging from 8 to 128 GB. Networked storage for these servers is accessible via NFS/Samba in Linux totaling 40.2 TB. The Bookhagen lab has several software packages and self-developed Matlab and Python codes to process airborne and ground-based lidar data. The Bookhagen lab has 5 Linux-based RAID servers with a total storage capacity of 100TB. The UCSB Davidson Library expressed support for data storage, hosting, and so forth.

Logistical and accounting support for the project includes a computer-systems team of three technicians who provide teaching and research support for the Department of Geography; a full-time administrative coordinator for spatial@ucsb to assist with the organization of workshops and financial management; and the Office of Geography Research and the UCSB Research Office, which provide oversight on meeting NSF and university requirements for accounting and reporting.

Instrumentation accessible to the project includes five fully instrumented micrometeorological towers (see www.geog.ucsb.edu/ideas, Station Equipment), two of which also include webcams (Model CC640). Equipment accessible to the project also includes a ground-based lidar (Riegl LMS-420i), including all necessary setup.

UC Santa Barbara also has a breadth of research and instructional units to enhance intellectual support for this project. Key resources include:

- The Center for Spatial Studies hosts the *IdMapThat.com* website that *collects Volunteered Geographic Information (VGI) relevant to the UCSB community and will share their experience in processing VGI.*

- The *Map and Imagery Library* (MIL)—host to expertise and resources associated with digital libraries, innovations in geo-browser technologies, and organization of digital archives for spatial data; also a government map and spatial data depositary;
- The *IDEAS* program of the VIPER Lab at the Geography Department of UCSB hosts sensor data and spectral signatures. Their advise will assist in setting up the semantic signature library.
- Remote-sensing derived TRMM rainfall data that have been calibrated and validated for hydrologic and geomorphologic applications.
- The *Cognitive Science Program* (CSP) and the *Research Unit on Spatial Cognition and Choice* (RUSCC)—CSP and RUSCC are hosts to leading collaborative research programs that link psychologists, other behavioral scientists, and geographers in the understanding of spatial thinking processes; and
- Other UCSB based research laboratories and programs in parallel areas, including the Media Arts and Technology program; the Four Eyes Lab, in the Computer Science Department based on the "four I's" of *Imaging, Interaction, and Innovative Interfaces*; and the Vision Research Lab in Electrical and Computer Engineering; plus the Allosphere virtual visualization facility.

Wright State University

In Prof. Hitzler's lab, the typical gradate research assistant workstation at the center has a quad core dual processor, 4GB memory and 500GB harddisk. Prof. Hitzler's graduate students furthermore use HP Elitebook Laptop computers or similar ones for their work.

For computationally intensive tasks, Prof. Hitzler's lab has access to the Kno.e.sis Center's rack with 10 servers with main memory ranging from 16GB to 128GB, main, and a 10TB file server. Two additional racks support a 19 node cloud computing laboratory which can also be used.

Prof. Hitzler's lab furthermore has access to the administrative/secretarial support personnel at the Kno.e.sis Center.

Data Management Plan

The project PI will be chiefly responsible for the collection and storage of all project data. All individual student data will be handled confidentially. Aggregate, anonymized, data will be shared with the Web Reasoning and Rule Systems Conference Association (RRA).

Data gained during the project will be retained for no less than 3 years following the close of the project. It is to be expected that aggregate data will become part of the permanent record of the RRA.

Raw data will be stored on the PI's computer and on a UCSB servers for backup. Aggregate data will become part of the permanent record files of the RRA, and will be kept by a member of the managing committee.

Raw application data will be stored as PDF files and in Microsoft Excel (.xls) format. Aggregate data will be stored in Microsoft Excel (.xls) format, and in text form as report from the PI to the RRA.