

Personal Data

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Isabel García
Contreras

Work Experience

Nov 2021 - Present Postdoctoral Fellow at **University of Waterloo**, Waterloo, Canada
Sep 2016 - Aug 2021 Research Student at the **IMDEA Software Institute**, Madrid, Spain
Aug 2019 - Dec 2019 International Fellow at **SRI International**, Menlo Park, CA, USA
Feb 2014 - Jul 2015 Intern at **HPCN, Universidad Autónoma de Madrid**, Spain

Education

Jul 2021 PhD in Artificial Intelligence, **Universidad Politécnica de Madrid**.
Thesis: *A scalable static analysis framework for reliable program development exploiting incrementality and modularity*
Jul 2016 MSc in Artificial Intelligence, **Universidad Politécnica de Madrid**.
Master Thesis: *Code Search: A Semantic, Abstract Interpretation-based Approach*
Jul 2015 Degree in Computer Engineering, **Universidad Autónoma de Madrid**. Final Project: *Generación de Flujos en Redes Multigigabit Ethernet Acelerada Mediante Hardware Dedicado*
Top of class of 2015

Research Interests

My research interests include static analysis and verification of software, abstract interpretation, in particular, how to perform them in a scalable way, (constraint) logic programming, and semantic code search.

Selected Publications

- [1] M.A. Sanchez-Ordaz, I. Garcia-Contreras, V. Perez-Carrasco, J. F. Morales, P. Lopez-Garcia, and M. V. Hermenegildo. Ver-
ify: On-the-fly Assertion Checking via Incrementality. *Theory and Practice of Logic Programming*, September 2021.
Special Issue on ICLP'21.
- [2] I. Garcia-Contreras, J. F. Morales, and M. V. Hermenegildo. Incremental and Modular Context-sensitive Analysis. *Theory
and Practice of Logic Programming*, 21(2):196–243, January 2021.
- [3] R. Bruni, R. Giacobazzi, R. Gori, I. Garcia-Contreras, and D. Pavlovic. Abstract Extensionality – On the Properties of
Incomplete Abstract Interpretations. In *Proc. ACM Symposium on Principles of Programming Languages 2020*, January
2020.
- [4] I. Garcia-Contreras, J.F. Morales, and M. V. Hermenegildo. Incremental Analysis of Logic Programs with Assertions and
Open Predicates. In *Proceedings of the 29th International Symposium on Logic-based Program Synthesis and Transfor-
mation (LOPSTR'19)*, volume 12042 of LNCS, pages 36–56. Springer, 2020.
- [5] I. Garcia-Contreras, J.F. Morales, and M. V. Hermenegildo. Experiments in Context-Sensitive Incremental and Modu-
lar Static Analysis in CiaoPP. In *10th Workshop on Tools for Automatic Program Analysis (TAPAS'19)*, October 2019.
(Extended Abstract).
- [6] I. Garcia-Contreras, J.F. Morales, and M. V. Hermenegildo. Multivariant Assertion-based Guidance in Abstract Interpre-
tation. In *Post-Proceedings of the 28th International Symposium on Logic-based Program Synthesis and Transformation
(LOPSTR'18)*, number 11408 in LNCS, pages 184–201. Springer-Verlag, January 2019.
- [7] I. Garcia-Contreras, J. F. Morales, and M. V. Hermenegildo. Semantic Code Browsing. *Theory and Practice of Logic Pro-
gramming, 32nd Int'l. Conference on Logic Programming (ICLP'16) Special Issue*, 16(5-6):721–737, September 2016.

Projects

I have participated in the projects:

2020 - 2021	PROCEDURE: <i>Rigorous methods for the development of software systems with certified quality and reliability</i> . Code: PID2019-108528RB-C21. Spanish MICIIN.
2018 - 2020	TRACES: <i>Technologies and tools for Resource-Aware, Correct, Efficient Software</i> . Code: TIN2015-67522-C3-1-R. Spanish MINECO.

Computer Skills

Prolog, c, \LaTeX , unix, git, gitlab, Docker, C++, vhdl, verilog, lisp, bash, html, css, python, sql, Java

Languages

Spanish: Native | English: Fluent | German: Basic

Scholarships and Prizes

2017 - 2021	FPU Grant 16/04811 by Spanish Ministerio de Educación y Ciencia
Oct 2018	1 st prize in womENCourage'18 Hackathon
Jul 2017	Best Ms. Thesis SISTEDES-Accenture Technology prize
2016	José Cuenca Award from the Department of Artificial Intelligence, UPM
2013 - 2014	Excellence Scholarship (Comunidad de Madrid, Spain)
2012 - 2013	Excellence Scholarship (Comunidad de Madrid, Spain)
Sep 2012	Premio esfuerzo EPS (Universidad Autónoma de Madrid, UAM)
Summer 2010	Scholarship of the German Embassy in Spain "Alumnos premio"
Jun 2010	2 nd prize of "Descubriendo la ciencia" from Auxilab

Teaching

Winter 2022	<i>Software Testing, Quality Assurance, and Maintenance</i> (TA), University of Waterloo, Canada
Feb - July of 2021/2020/2019	<i>Declarative programming: Logic and constraints</i> , School of Computer Science, UPM, Spain

Selected Talks

Sep 2021	<i>VeriFly: On-the-fly Assertion Checking via Incrementality</i> , ICLP'21, Porto, Portugal (virtual).
May 2021	<i>Verifyfly: On-the-fly assertion checking with CiaoPP</i> , F-IDE'21, Co-located with NASA Formal Methods (virtual).
Mar 2021	<i>Incremental and Modular Context-sensitive Analysis</i> , HCVS'21, Luxembourg, Luxembourg (virtual).
Dec 2019	<i>Modular Verification of C Programs</i> , SRI International, Menlo Park, CA, USA.
Oct 2019	<i>Incremental Analysis of Logic Programs with Assertions and Open Predicates</i> , LOPSTR'19, Porto, Portugal.
Feb 2019	<i>Cocinando la informática</i> , Int'l Day of Women and Girls in Science, I.E.S. San Isidro, Madrid, Spain.
Oct 2018	<i>Code. Analyze. Repeat. Incremental and Modular Static Program Analysis</i> , womENCourage'18, Belgrade, Serbia.
Sep 2018	<i>Assertion-base Guidance in Abstract Interpretation</i> , LOPSTR'18, Frankfurt, Germany.
Jul 2018	<i>Towards Incremental and Modular Context-sensitive Analysis</i> , ICLP'18 - FLoC'18, Oxford, UK.
Jul 2017	<i>Code Search: A Semantic, Abstract Interpretation-based Approach</i> , Jornadas SISTEDES'17, La Laguna, Spain.
Jun 2017	<i>Incremental and Modular Context-sensitive Analysis</i> , IMDEA Software Institute, Madrid, Spain.
Oct 2016	<i>Semantic Code Browsing</i> , ICLP'16, New York, USA.

Other Activities

Nov 2020	Participated in the Madrid Science Week disseminating event.
Feb 2020	Co-organized " Rompiendo códigos: Mujeres y niñas en la ciencia ", celebrated in the framework of the International Day of Women and Girls in Science.
Spring 2019	Chair of the Software Seminar Series (Spring season) at the IMDEA Software Institute.
Mar 2019	Participated in the Madrid Science Fair , disseminating the research that takes place in the IMDEA Software Institute to students.
Feb 2019	Co-organized " I+D+M²: Mujeres en Montegancedo ", celebrated in the framework of the International Day of Women and Girls in Science, it is a local conference to disseminate the work of female scientists of the Technical University of Madrid.
Feb 2018	Participated in a radio debate in the framework of the International Day of Women and Girls in Science.