

Antonio E. Flores Montoya

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Germany

Education

September 2012 - August 2017: PhD in Computer Science

Institution: Technical University of Darmstadt
Topic: Cost Analysis of Programs Based on the Refinement of Cost Relations
Advisor: Reiner Hähnle
Grade: Summa cum laude (with distinction)

October 2011 - June 2012: Master en Investigación en Informática (Master in Computer Science Research)

Institution: Complutense University of Madrid.
Subjects included: Program Analysis and Transformation, Abstract Models of Computation and Models of Concurrent and Distributed Systems.
Master Thesis: Analysis of May-Happen-in-Parallel in Concurrent Objects
Advisors: Elvira Albert and Samir Genaim

2006 - 2011: Ingeniería en Informática (Computer Science)

Institution: Complutense university of Madrid.
Average Grade: 94.8% (Valedictorian)
Awarded the “Premio Extraordinario de Licenciatura” (Extraordinary Degree award)

2009 - 2010: Trans-Atlantic Science Student Exchange Program (TASSEP)

Institution: North Carolina State University
Reference: <http://studyabroad.unc.edu/tassep/>

Employment

September 2012 - August 2017 : PhD student

Institution: Technical university of Darmstadt
Advisor: Reiner Hähnle

February - April 2016: DAAD Short scholarship for PhD students

Institution: Technical university of Vienna
Mentor: Florian Zuleger

October 2011 - August 2012: Research Assistant, PROMETIDOS-CM

Institution: Complutense University of Madrid

June 2010 - Sept 2011: Research internship, Dept. of Computer Science

Institution: Complutense University of Madrid

Teaching

October 2016-February 2017: Automated Theorem Proving (Exercises)

I was in charge of the problem sessions of the master course “Automated Theorem Proving” which focuses on the theoretical foundations of calculi for automated theorem proving in first-order logic. It includes topics such as resolution, tableaux and SAT solving.

April-July 2014: Automated Theorem Proving (Exercises)

April-July 2013: Automated Theorem Proving (Exercises)

Software

CoFloCo: A static analysis tool to infer automatically symbolic complexity bounds of imperative and recursive programs. CoFloCo is still being actively developed. It is open source and available at <https://github.com/aefflores/CoFloCo>

In September 2016 CoFloCo participated in the [termination competition](#): in two categories obtaining the second position in both:

- Complexity of Integer Transition Systems: (1) AProVE (2) CoFloCo (3) TcT (4) Loopus
- Complexity of Integer C programs: (1) Loopus (2) CoFloCo (3) AProVE (4) TcT

DeCo: A deadlock analyzer for concurrent objects.

MayPar: A may-happen-in-parallel (MHP) static analyzer for a distributed asynchronous language based on concurrent objects. It allows analyzing an application and finding out the pairs of statements that can execute in parallel.

Both DeCo and MayPar are integrated in the SACO system, a static analyzer for concurrent objects. <http://costa.ls.fi.upm.es/web/saco.php>

Publications in Conferences

- [1] Antonio Flores-Montoya. Upper and lower amortized cost bounds of programs expressed as cost relations. In John S. Fitzgerald, Constance L. Heitmeyer, Stefania Gnesi, and Anna Philippou, editors, *FM 2016: Formal Methods - 21st International Symposium, Limassol, Cyprus, November 9-11, 2016, Proceedings*, volume 9995 of *Lecture Notes in Computer Science*, pages 254–273, 2016. [Pdf](#)
- [2] Elvira Albert, Antonio Flores-Montoya, and Samir Genaim. May-happen-in-parallel analysis with condition synchronization. In *Foundational and Practical Aspects of Resource Analysis (FOPARA 2015)*, 2015. [Pdf](#)
- [3] Antonio Flores Montoya and Reiner Hähnle. Resource analysis of complex programs with cost equations. In Jacques Garrigue, editor, *12th Asian Symposium on Programming Languages and Systems (APLAS'14)*, volume 8858 of *Lecture Notes in Computer Science*, pages 275–295. Springer, November 2014. [Pdf](#)
- [4] Elvira Albert, Antonio Flores-Montoya, Samir Genaim, and Enrique Martin-Martin. Termination and Cost Analysis of Loops with Concurrent Interleavings. In Dang Van Hung and Mizuhito Ogawa, editors, *Automated Technology for Verification and Analysis - 11th International Symposium, ATVA 2013, Hanoi, Vietnam, October 15-18, 2013. Proceedings*, volume 8172 of *Lecture Notes in Computer Science*, pages 349–364. Springer, 2013. [Pdf](#)

- [5] Antonio Flores-Montoya, Elvira Albert, and Samir Genaim. May-Happen-in-Parallel based Deadlock Analysis for Concurrent Objects. In Dirk Beyer and Michele Boreale, editors, *Formal Techniques for Distributed Systems (FMOODS/FORTE 2013)*, volume 7892 of *Lecture Notes in Computer Science*, pages 273–288. Springer, June 2013.
- [6] Elvira Albert, Antonio Flores-Montoya, and Samir Genaim. Analysis of May-Happen-in-Parallel in Concurrent Objects. In Holger Giese and Grigore Rosu, editors, *Formal Techniques for Distributed Systems - Joint 14th IFIP WG 6.1 International Conference, FMOODS 2012 and 32nd IFIP WG 6.1 International Conference, FORTE 2012, Stockholm, Sweden, June 13-16, 2012. Proceedings*, volume 7273 of *Lecture Notes in Computer Science*, pages 35–51. Springer, 2012.

Publications in Journals

- [1] Elvira Albert, Antonio Flores-Montoya, Samir Genaim, and Enrique Martin-Martin. Rely-guarantee termination and cost analyses of loops with concurrent interleavings. *Journal of Automated Reasoning*, pages 1–39, 2016. [Pdf](#)
- [2] Elvira Albert, Antonio Flores-Montoya, Samir Genaim, and Enrique Martin-Martin. May-Happen-in-Parallel Analysis for Actor-based Concurrency. *ACM Transactions on Computational Logic*, 17(2):11:1–11:39, January 2016. [Pdf](#)

Tool papers in Conferences

- [1] Elvira Albert, Puri Arenas, Antonio Flores-Montoya, Samir Genaim, Miguel Gómez-Zamalloa, Enrique Martin-Martin, Germán Puebla, and Guillermo Román-Díez. SACO: Static Analyzer for Concurrent Objects. In Erika Ábrahám and Klaus Havelund, editors, *Tools and Algorithms for the Construction and Analysis of Systems - 20th International Conference, TACAS 2014*, volume 8413 of *Lecture Notes in Computer Science*, pages 562–567. Springer, 2014. [Pdf](#)
- [2] Elvira Albert, Antonio Flores-Montoya, and Samir Genaim. Maypar: a may-happen-in-parallel analyzer for concurrent objects. In Will Tracz, Martin P. Robillard, and Tevfik Bultan, editors, *20th ACM SIGSOFT Symposium on the Foundations of Software Engineering (FSE-20), SIGSOFT/FSE’12, Cary, NC, USA - November 11 - 16, 2012*, pages 1–4. ACM, November 2012.
- [3] Elvira Albert, Israel Cabañas, Antonio Flores-Montoya, Miguel Gómez-Zamalloa, and Sergio Gutiérrez. jPET: an Automatic Test-Case Generator for Java. In *18th Working Conference on Reverse Engineering (WCRE 2011)*, pages 441–442. IEEE Computer Society, October 2011. [Pdf](#)

Other Professional Activities

External Reviewer: IJCAR 16, iFM 16, FMCAD 15, TACAS 2015, AISC 2014, SAS 2013

Research Projects Memberships

Title: Envisage: Engineering Virtualized Services
 European Project FP7 610582
 Period: September 2013 - September 2016
 Head researcher: Prof. Einar Broch Johnsen
<http://www.envisage-project.eu/>

Title: DOVES: Development Of Verifiable and Efficient Software
 Period: February 2009 - December 2013
 Head researcher: Manuel Hermenegildo Salinas

Title: PROMETIDOS-CM: (Madrid Program in Rigorous Methods for the Development of Software)
 Period: January 2010 - December 2013
 Head researcher: Francisco Lopez Fraguas

Additional Education

- *NATO Advanced Study Institute- International Summer Shool MOD 2013: Software Systems Safety* held in Marktoberdorf (Germany) from July 30 to August 11, 2013. (63 hours)
- *HATS-FMCO international summer school on Formal Models for Components and Objects* held in Bertinoro (Italy) from September 24 to 28, 2012. (27 hours)
- *First Prometidos Summer School*. Coordinator: Francisco Javier López Fraguas. Complutense University of Madrid. Place: Facultad de Informática . (20 hours) September 2011.
- *Software Verification with the KeY System*. Professor: Wolfgang Ahrendt. Chalmers University, Sweden. Place: Facultad de Informática, Polytechnic University of Madrid. (20 hours) June 2010.

Awards, Fellowships, and Grants

2010 - 2011	Beca de Excelencia de la Comunidad de Madrid (Excellence grant given by the Community of Madrid)
2008 - 2009	Beca de Excelencia de la Comunidad de Madrid
2007 - 2008	Beca de Excelencia de la Comunidad de Madrid

Languages

- Spanish: Native
- English: Expert
- German: Advanced