Jose Abel Castellanos Joo

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1 Personal Statement

My research interest lies in the intersection of logic in computer science and algebraic methods, specifically in designing and applying algebraic tools for program verification. Additionally, I have found a recent passion for security properties of programming languages and the implemetation of the latter by using formal methods.

2 Education

- 2018 - Present: University of New Mexico, Ph.D student advised by Prof. Deepak Kapur (Transfer from the MS program)
- 2016 - 2018: University of New Mexico, M.S. student. GPA: 4.05/4.00
- 2010 - 2015: Universidad de las Americas Puebla, Bachelor of Electronics Engineering. GPA: 9.7/10

3 Research Experience

- Research Intern, Microsoft Research (Mentor: Principal RSDE Mark Marron). I developed a prototype of the verification engine for the Bosque programming language in F^*. Bosque is a language that does not implement loops but offers to programmers transformers and functional programming constructions (limited fold operation) to do their programming tasks.
- Master Thesis, University of New Mexico (Advisor: Prof. Deepak Kapur). Implementation of Novel Interpolation Algorithms for EUF and Octagonal Formulas.
- Research Student, Universidad de las Americas Puebla (Advisor: Prof. Mauricio Osorio). 2015 - 2017. Collaboration with a group or researchers on Paraconsistent Logics.My activities included working on some theorems and generate models using the answer set solver Clasp.

- Undergraduate Thesis, Universidad de las Americas (Advisor: Prof. Mauricio Osorio). Fall 2005. Revisiting C_1.

4 Work Experience

- 2020:
  - Reviewer at the Thirteen Latin America Workshop on New Methods of Reasoning 2020. `http://www.lanmr.unam.mx/`
- 2019:
  - Teaching Assistant at the University of New Mexico. Graduate level Geometric and Probabilistic Methods in Computer Science.
  - Summer Research Intern at Microsoft Research.
  - Reviever at the 35th International Conference on Logic Programming 2019. `https://www.cs.nmsu.edu/ALP/iclp2019/`
  - Teaching Assistant at the University of New Mexico. Graduate level Theory of Computation.
- 2018:
  - Teaching Assistant at the University of New Mexico. Graduate level Algorithms and Data Structures.
  - PC member at the 11th Latin American Workshop on New Methods of Reasoning 2018. `https://lanmr.cs.buap.mx`
  - Reviewer at the 14th Annual Computer Science Student Conference 2018. `https://www.cs.unm.edu/~csgsa/2017-2018/papers.html`
- 2017:
  - Reviewer at the 17th Latin American Symposium on Mathematical Logic. `http://www.fcfm.buap.mx/SLALM2017/`
- 2016:
  - Reviewer at the 10th Latin American Workshop on Logic/Languages, Algorithms and New Methods of Reasoning. `http://ceur-ws.org/Vol-1659/`
  - Reviewer at the 8th Mexican Congress on Artificial Intelligence. `https://www.comia.org.mx/2016/`
- 2015:
  - Reviewer at the 12th International Colloquium on Theoretical Aspects of Computing. `http://www.ictac2015.co/`
- 2014:

- Intern, Innova4D. I worked and analysed graph algorithms to compute Freeman centralities for the development of a recommendation system.

5 Skills and competences

- Languages
  - English: Fluent
  - Spanish: Native
- Programming languages:
  - Imperative: C/C++, Java
  - Scripting: Python, Bash
  - Logical/Functional: Haskell, Ocaml, Scala
  - Verification: Z3, Mathsat, SMTInterpol, F^*, Prover9, Mace4
  - Symbolic/Algebraic: Mathematica, Maple, Macaulay2, Singular
  - Document typesetting: LaTeX, Pandoc, Madoko, Markdown
  - Web design: HTML, CSS, Javascript, Typescript

6 Publications

7 Talks

- *AXDInterpolator: A Tool for Computing Interpolants for Arrays with MaxDiff.* 19th International Workshop on Satisfiability Modulo Theories. July, 2021.
- *Implementation of Uniform Interpolation Algorithm.* Master Thesis Defense. October, 2020.
- *A new interpolation algorithm for the theory of Equality with Uninterpreted Functions.* Computer Science Colloquium Series, University of New Mexico. September, 2020
- *A Single Proof of Classical Behaviour in da Costa's C_n systems.* Ninth Latin American Workshop on Logic/Languages, Algorithms and New Methods of Reasoning LANMR). November, 2014.

8 Workshops attended

- Beyond Satisfiability: Satisfiability: Theory, Practice, and Beyond 2021 https://simons.berkeley.edu/workshops/sat-2021-1
- Theoretical Foundations of SAT/SMT Solving: Satisfiability: Theory, Practice, and Beyond 2021 https://simons.berkeley.edu/workshops/tfcs2021-sat2021-joint
- AMS Short Course. Sum of Squares: Theory and Applications - 2019. http://www.ams.org/meetings/short-courses/short-course-general
- Visiting Student at the Institute of Software Chinese Academy of Sciences - 2018

9 Scholarships Awarded

- Scholarship to attend Oregon Programming Languages Summer School - 2017. https://www.cs.uoregon.edu/research/summerschool/summer17/
- AMIGO Scholarship: Scholarship for Graduate Studies at the University of New Mexico.
- Roberto Rocca Scholarship: Scholarship for Undergraduate Studies at Universidad de las Americas Puebla.

10 Prizes and Honors

- ANFEI: Best student of the Electronics Engineering 2016 class.
- Magna Cum Lauda (BSc) Universidad de las Americas Puebla.

11 Society Memberships

- Women in Computing association at the University of New Mexico.

12 Extracurricular Activities

- CSGSA - Treasurer: I supported the organization with the development of the website for the Computer Science Student Conference 2018 at UNM, media and management of Internal Requisitions.
- Founder member of the Clique Student Organization: This organization provided students a proper environment to develop programming skills for programming competitions like the ACM ICPC.