Jose Abel Castellanos Joo

2700 Campus Blvd NE UNM SRC 1385
Albuquerque, NM 87106
jabelcastellanosjoo@unm.edu

1 Research Interests

- Formal Verification
- Archimedean Quadratic Modules
- Groebner basis algorithms
- Quantifier-free interpolation algorithms for decidable logics
- Non-classical logics

2 Education

- 2020 - Present: University of New Mexico, Ph.D student advised by Prof. Deepak Kapur
  - TODO: Write about dissertation topic.
- 2016 - 2020: University of New Mexico, M.S. student. GPA: 4.05/4.00
  - Master Thesis, University of New Mexico (Advisor: Prof. Deepak Kapur). Implementation of Novel Interpolation Algorithms for EUF and Octagonal Formulas.
- 2010 - 2015: Universidad de las Americas Puebla, Bachelor of Electronics Engineering. GPA: 9.7/10
  - Undergraduate Thesis, Universidad de las Americas (Advisor: Prof. Mauricio Osorio). Fall 2015. Revisiting C_1.

3 Work 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.

- 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.

- Intern, Universidad de las Americas Puebla (Advisor: Prof. Ofelia Cervantes Gutierrez).
  - I worked and analysed graph algorithms to compute Freeman centralities for the development of a recommendation system.

4 Publications

[1] J Castellanos Joo, Silvio Ghilardi, Alessandro Gianola, and Deepak Kapur. Axdinterpolator: A tool for computing interpolants for arrays with maxdif. In *19th International Workshop on Satisfiability Modulo Theories co-located with 33rd International Conference on Computer Aided Verification (CAV 2021)*, volume 2908, pages 40–52. CEUR-WS. org, 2021.

[2] Mauricio Osorio, J. L. Carballido, C. Zepeda, and J. A. Castellanos. Weakening and extending $\mathbb{Z}$. *Logica Universalis*, 9(3):383–409, Aug 2015.

[3] Mauricio Osorio and José Abel Castellanos. A single proof of classical behaviour in da costa's C_n systems. *Electronic Notes in Theoretical Computer Science*, 315:3–16, Sep 2015.

[4] Mauricio Osorio and José Abel Castellanos Joo. Equivalence among rc-type paraconsistent logics. *Logic Journal of IGPL*, page jzw065, Jan 2017.

5 Conference 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.

6 Software Projects

TODO.

7 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`

8 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

9 Teaching Assistant Experience

- Fall 2022; [CS 241 - Data Organization using C] with Prof. Soraya Abad-Mota
- Fall 2019; CS 530 - Geometric and Probabilistic Methods in Computer Science with Prof. Lance Williams
- Spring 2022; CS 429/529 - Machine Learning with Prof. Trilce Estrada
- Fall 2019; CS 530 - Geometric and Probabilistic Methods in Computer Science with Prof. Lance Williams
- Spring 2019; CS 500 - Theory of Computation with Prof. Deepak Kapur
- Fall 2018; CS 561 - Algorithms and Data Structures with Prof. Jared Saia

10 Conference Refereeing

- Thirteen Latin America Workshop on New Methods of Reasoning 2020. `http://www.lanmr.unam.mx/`
- 35th International Conference on Logic Programming 2019. `https://www.cs.nmsu.edu/ALP/iclp2019/`
- PC member at the 11th Latin American Workshop on New Methods of Reasoning 2018. `https://lanmr.cs.buap.mx`
- 14th Annual Computer Science Student Conference 2018. `https://www.cs.unm.edu/~csgsa/2017-2018/papers.html`
- 17th Latin American Symposium on Mathematical Logic. `http://www.fcfm.buap.mx/SLALM2017/`
- 10th Latin American Workshop on Logic/Languages, Algorithms and New Methods of Reasoning. `http://ceur-ws.org/Vol-1659/`
- 8th Mexican Congress on Artificial Intelligence. `https://www.comia.org.mx/2016/`
- 12th International Colloquium on Theoretical Aspects of Computing. `http://www.ictac2015.co/`

11 Scholarships and Awards

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

12 Society Memberships

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

13 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.