ELBA GARZA

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EDUCATION

Texas A&M University, College Station, TX USA *Aug. 2016 - Present*
PhD Candidate, Department of Computer Science and Computer Engineering
Dissertation Title: *Developing Robust Microarchitectural Predictive Structures for the Front End*
Advised by Daniel A. Jiménez

Princeton University, Princeton, NJ USA *Sep. 2012 - Jun. 2015*
Master of Science (MSc) in Engineering in Computer Science
Thesis Title: *Efficient Design Space Exploration Techniques for Heterogeneous Systems*
Advised by Margaret R. Martonosi and Kelly A. Shaw

Columbia University, New York, NY USA *Sep. 2007 - May 2011*
Bachelor of Science (BSc) in Computer Science

ACADEMIC HONORS AND AWARDS

Graduate Diversity Fellowship *Texas A&M University* *2016 - Present*
Lance Stafford Larson Student Writing Award *IEEE Computing Society* *2020-2021*
Google/SVA Scholarship *Google and Student Veterans of America* *2020-2021*
Graduate Leadership Excellence Award *Texas A&M University* *Spring 2021*
Graduate Teaching Fellow *Texas A&M University* *Fall 2018*
Knauss Family Aggie Veteran Freedom Scholarship *Texas A&M University* *2017-2018*
C. Prescott Davis Named Scholar *Columbia University* *2007 - 2011*

PUBLICATIONS

Elba Garza, Gururaj Saileshwar, Udit Gupta, Tianyi Liu, Abdulrahman Mahmoud, Saugata Ghose, and Joel Emer
"Mentoring Opportunities in Computer Architecture: Analyzing the Past to Develop the Future", Workshop on Computer Architecture Education, The International Symposium on Computer Architecture (**ISCA 2021**), June 2021.

Samira Mirbagher-Ajorpaz, **Elba Garza**, Gilles A. Pokam, and Daniel A. Jiménez
"CHiRP: Control-Flow History Reuse Prediction", The International Symposium on Microarchitecture (**MICRO 2020**), October 2020. Acceptance Rate: 19.4%

Samira Mirbagher-Ajorpaz, Gilles A. Pokam, Esmaeil Koruyeh, **Elba Garza**, Nael Abu-Ghazaleh, and Daniel A. Jiménez
"PerSpectron: Detecting Microarchitectural Footprints of Side Channel Attacks with Perceptron Learning", The International Symposium on Microarchitecture (**MICRO 2020**), October 2020. Acceptance Rate: 19.4%

Elba Garza, Samira Mirbagher-Ajorpaz, Tahsin Khan, and Daniel A. Jiménez
"BLBP: Bit-Level Perceptron Prediction for Indirect Branch Prediction", The International Symposium on Computer Architecture (**ISCA 2019**), June 2019. Acceptance Rate: 16.98%

Samira Mirbagher-Ajorpaz, **Elba Garza**, Sangam Jindal, and Daniel A. Jiménez
"Exploring Predictive Replacement Policies for Instruction Cache and Branch Target Buffer", The International Symposium on Computer Architecture (**ISCA 2018**), June 2018. Acceptance Rate: 17.2%

Wenhao Jia, **Elba Garza**, Kelly A. Shaw, and Margaret Martonosi
"GPU Performance and Power Tuning Using Regression Trees", ACM Transactions on Architecture and Code Optimization (**TACO**), 12, 2, Article 13, 26 pages, May 2015.

PRESENTATIONS, PANELS, AND POSTERS

"Creating Composite Instruction Prefetchers Using N-Many Sub-Prefetchers" **Poster**
Career Workshop for Inclusion and Diversity in Computer Architecture at MICRO 2021

"Diversity Includes Disability Includes Mental Illness: Expanding the Scope of DEI Efforts in Computer Science" **Panel**
CMD-IT/ACM Richard Tapia Celebration of Diversity in Computing Conference 2021

"Disability Disclosure in Education and Employment" **Panel**
CMD-IT/ACM Richard Tapia Celebration of Diversity in Computing Conference 2021

"Hybridizing Composite Prefetchers for Instruction Fetch" **Presentation and Poster**
Semiconductor Research Coroporation (SRC) TECHCON 2021

"Accurate and Resilient Microarchitectural Predictive Structures and Policies" **Presentation**
CMD-IT Academic Careers Workshop 2021

"DEI Career Week: First Generation & Low Income Panel" **Panel**
DEI Career Week for the Computer Science Department at Columbia University 2021

"Making TLB Replacement Better—CHiRP: Control-Flow History Reuse Prediction" **Presentation and Poster**
Rising Stars 2020 — EECS at UC Berkeley

"How to be successful after securing your industry/academic job?" **Panel**
JOBS Workshop at MICRO 2020

"Barça: Branch Agnostic Region Searching Algorithm" **Presentation**
Semiconductor Research Coroporation (SRC) TECHCON 2020

TEACHING EXPERIENCE

CSCE 121 Introduction to Program Design & Concepts *Instructor of Record* *Fall 2018*
- Prepared and presented twice-weekly lectures to 85 undergraduate students
- Directed one head graduate teaching assistant (TA) along with 6 undergraduate TAs
- Organized three twice-weekly lab sections taught by head TA and undergraduate TAs
- Adapted and updated ten code-based homework assignments along with labs
- Created two midterm exams and one final examination
- Held weekly office hours and met with students one-on-one for personal issues
- Navigated code plagiarism and test cheating cases at University level

COS 333 Advanced Programming Techniques, Princeton University *TA* *Spring 2015*
- Held weekly office hours, graded homework assignments, and semester-long final projects
- Advised five student groups through developing their first large-scale software projects

Emerging Scholars Program, Columbia University *Peer Leader* *Fall 2009/Spring 2010*

· Presented weekly lectures to small group of undergraduate students
· Undergraduate students chosen from historically underrepresented groups
· Lectures introduced and covered various disciplines within Computer Science
· Directed lectures with help of an assistant peer leader and two graduate mentors

Emerging Scholars Program, Columbia University *Assistant Peer Leader Fall 2008/Spring 2009*
· Helped peer teacher steer lectures described above
· Wrote grant-destined reports on the efficacy of weekly lecture material
· Suggested changes to material and/or gave sustaining comments to graduate mentors

PROFESSIONAL SERVICE

Executive Committee Student Representative *2020 - Present*
IEEE Technical Committee on Computer Architecture (TCCA)

External Review Committee Member *2022 (Upcoming)*
The International Symposium on Computer Architecture (ISCA)

Organization Committee Member - Social Chair *2022 (Upcoming)*
Architectural Support for Programming Languages and Operating Systems (ASPLOS)

Artifact Evaluation Committee Member *2021*
The International Symposium on Microarchitecture (MICRO)

Technical Reviewer *2021*
ACM Transactions on Architecture and Code Optimization (TACO)

Organization Committee Member - Social Chair *2021*
Architectural Support for Programming Languages and Operating Systems (ASPLOS)

Artifact Evaluation Committee Member *2021*
Architectural Support for Programming Languages and Operating Systems (ASPLOS)

JOBS Workshop Co-Organizer *2020*
The International Symposium on Microarchitecture (MICRO)

LEADERSHIP EXPERIENCE

Student Founder/Chair *2020 - Present*
Computer Architecture Student Association (CASA)

Student Founder/Officer *2020 - Present*
Aggie Hispanics in Computing, Texas A&M University

Secretary *2010-2011*
Columbia ACM Student Chapter, Columbia University

Peer Leader *2009-2010*
Emerging Scholars Program, Columbia University

Social Chair *2009-2010*
Columbia ACM Student Chapter, Columbia University

Assistant Peer Leader *2008-2009*
Emerging Scholars Program, Columbia University

WORK EXPERIENCE

AMD, Bellevue, WA USA *Research Intern* *Jan. 2019 - Aug. 2019*
· Analyzed performance models for heterogeneous computing system configurations

Arm Ltd, Austin, TX USA *Research Intern* *May 2017 - Aug. 2017*

· Explored utilization of machine learning techniques within computer architecture design process

Samsung Austin R&D Center, Austin, TX USA *Research Intern* *Jun. 2015 - Jun. 2016*

· Utilized data visualization and data analysis techniques to gather information on interactions of performance parameters

Post-Graduate Research, San Antonio, TX USA *Sep. 2011 - May 2012*

· Explored the benefits of randomization in cache addresses to lower miss rates and conflicts

· Used codebase created for ISCA's JWIC-1 Cache Replacement Competition to include matrix manipulation in cache address creation

CRA-W CREU at Columbia University, New York, NY USA *Sep. 2010 - Jun. 2011*

· Used a modified SimpleScalar simulator to test the effects of hardware accelerators on certain data types

· Modified ARM ISA to include new data types; in this case, sparse vectors

CRA-W DREU at Brown University, Providence, RI USA *Intern* *Jul. 2010 - Sep. 2010*

· Looked into creating a dynamic approach at reducing the effects of Negative-bias Temperature Instability (NBTI) in embedded systems, specifically scratchpad memories

CRA-W DREU at Georgia Tech, Atlanta, GA USA *Intern* *May 2009 - Aug. 2009*

· Researched the importance of end-flow basic blocks within a branch prediction environment

· Looked into how control flow post-dominators can be used to detect loops within programs

OTHER SERVICE AND OUTREACH

Rubies Mentor *Aggie Women in Computer Science, Texas A&M University* *2016 - 2020*

Graduate Mentor *Princeton Women in Computer Science, Princeton University* *2013 - 2015*

CRA-W Programs Alumna Mentor *Grace Hopper Celebration* *October 2014*

Computer Science Graduate Committee Member *Princeton University* *2013 - 2014*

Undergraduate Representative *CU Women in Computer Science, Columbia University 2008-2011*

REFERENCES

Daniel A. Jiménez, Texas A&M University *Advisor* *djimenez.@.cse.tamu.edu*

Timothy M. Pinkston, University of Southern California *tpink.@.usc.edu*

Saugata Ghose, University of Illinois Urbana-Champaign *ghose.@.illinois.edu*