Arman Barraghi Zadeh

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EDUCATION

Master of Science, Computer Engineering, May 2027
The University of Texas at Austin

Relevant Coursework: Computer Architecture, Machine Learning Hardware-Algorithm Co-Design, Security at the Hardware/Software Interface

Bachelor of Science, Computer Science, May 2025
Juniata College
Overall GPA: 3.96/4.00, *Summa Cum Laude*

Relevant Coursework: FPGA Digital Design, Electronics, Computer Science Research Sequence, Computer Organization, C++ Programming, Unix Programming, Differential Equations, Calculus Sequence, Linear Algebra, Introduction to Probability & Statistics, Programming Languages, Algorithms and Analysis, Software Models, Operating Systems, Introductory Physics Sequence

RESEARCH EXPERIENCE

Undergraduate Researcher, Dr. Gerald Kruse (Juniata College), 08/2024 – 05/2025

- Designed and implemented Doppio, a novel FPGA-based Memory Management Unit that enforces deterministic parallel execution using concepts from Deterministic Parallel Java (DPJ)
- Developed hardware modules in SystemVerilog including a multi-processor data aggregator and deterministic MMU capable of handling N processor data streams with configurable deterministic/non-deterministic operation modes
- Gained proficiency in FPGA development workflow using Xilinx Vivado ML, including circuit design, behavioral simulation, hardware synthesis, and bitstream generation on Artix A7-100T platform
- Conducted comprehensive hardware verification through testbench development and waveform analysis, ensuring proper sequential state machine operation across clock cycles
- Explored open-source hardware ecosystems by porting and analyzing 64-bit RISC-V multiprocessor systems (Muntjac), gaining exposure to TileLink interconnect protocols and cache coherency mechanisms
- Acquired hands-on experience with Electronic Design Automation (EDA) tools including FuseSOC, Edalize, and Verilator for HDL project management and simulation
- Investigated hardware-software co-design opportunities for parallel computing, contributing to research addressing the stagnation of Moore's Law through specialized processor architectures
- Prepared technical documentation and research findings for presentation at Juniata College's Liberal Arts Symposium, demonstrating ability to communicate complex computer architecture concepts

TEACHING EXPERIENCE

Teaching Assistant for PC209 Electronics, Juniata College, 01/2025 – 05/2025

- Assisted 12 students for theoretical and lab portions for 10 hours every week
- Lead lectures on BJT transistors, logic gates, and microcontrollers
- Aided with grading homework, exams, and lab reports

Academic Tutor, Juniata College, 08/2023 – 05/2025

- Recommended amongst the highest 1% of Computer Science students to be a subject tutor

- Promoted to tutor Data Science, IT, and Mathematics courses from August 2024
- Courses tutored: C++ Programming, Calculus 1, Computer Science 1, Computer Science 2, Discrete Mathematics, Introduction to Data Science, Linear Algebra, Principles of Programming

PRESENTATIONS

Liberal Arts Symposium, Huntingdon, PA, April 2024. Barraghi Zadeh, Arman; Federline, Rory; Rossman, Sierra; Villatte, Amandine. "Deliver a working microservice capable of CRUD operations on a few key models that are stored in Muni-Link databases" **(poster)**

Liberal Arts Symposium, Huntingdon, PA, April 2025. Barraghi Zadeh, Arman; Kruse, Gerald. "Doppio - A Novel FPGA-Based Implementation of Deterministic Parallel Java (DPJ)" **(presentation)**

INDUSTRY EXPERIENCE

Software Development Intern, Flat5LLC, May 2024 - November 2024
- Extracted 700 leads using a Python script to filter FMCSA census data containing over 2,000,000 records
- Performed data cleaning on over 1,000,000 United States-based records of shippers, brokers, and carriers
- Gathered contact information of 50,000 C-Suite individuals, in logistics companies garnering over $100,000,000 in annual revenue, utilizing the Apollo API in Python

Software Development Intern, Muni-Link, January 2024 – May 2024
- Contributed to the development of a serverless proof-of-concept for managing client account information (CRUD operations) using AWS Lambdas for a MySQL database serving 350 clients
- Utilized the Nuxt framework (built on Vue.js) for the front-end development
- The project resulted in a 20% return on investment (ROI) for Muni-Link

Technology Solutions Center Specialist, Juniata College, November 2023 - May 2025
- Provided immediate assistance in-person, on the phone, and online chat for 5 hours every week

Software Development Intern, International Organization for Migration, August 2021 – February 2022
- Shadowed the I.O.M Manila Developer Team in 10 weekly virtual sprint meetings
- Used the OpenUI5 framework to tweak 4 web applications used by 20,000 employees

LEADERSHIP/SERVICE

Social Innovation Challenge, March 2024
- Selected along with 5 other students to represent Juniata College in the Entrepreneurship Leadership Council's annual *Social Innovation Challenge*
- Lead a team of 4 to present "Nourish the Neighborhood", an organizational-based approach to mitigate food insecurity across college campuses

CommunitySOS, March 2024
- Lead a team of five to develop CommunitySOS in Penn State's "HackPSU" hackathon, a web application to connect community members in need of help with volunteers in their vicinity
- Awarded Peraton's "Best Web Hack Using React" prize at the event

CarbonCompass, March 2024
- Chosen as the only Juniata College student to participate in UCLA's "Hack on the Hill" hackathon

- Lead a team of four to create CarbonCompass, a greenhouse gas emission calculator for college students' common modes of transport

AWARDS

Barry M. Goldwater Scholarship Candidate, Juniata College, October 2024
Dale L. Wampler Award in Computer Science, Juniata College, May 2025
Dean's List, Juniata College, August 2020 - May 2025
Distinction in the Program of Emphasis, Juniata College, May 2025
Juniata Scholarship (Highest Merit-Based Scholarship), Juniata College, August 2020 - May 2025
The Tutoring Award, Juniata College, May 2025