Armin Bazarjani

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EDUCATION

University of Southern California — Los Angeles, California

Ph.D. in Psychology — *2023 – 2028 (expected)*
M.Sc. in Electrical and Electronics Engineering (3.8 GPA) — *2020 – 2021*
B.Sc. in Electrical Engineering — *2016 – 2020*

WORK EXPERIENCE

Honda Research Institute — San Jose, CA

Research Engineer, Supervisor: Dr. Behrzad Dariush — *Dec 2021 – Mar 2023*

- Developed a unified framework for the joint problem of trajectory prediction and imputation. This was the pioneering work that suggested and filled the gap in benchmarks and techniques for this joint problem. Additionally, we curated three benchmark datasets for the joint problem. This work culminated in a CVPR publication.
- Developed predictive models for road scene classification and segmentation into an orthographic bird's-eye view (BEV) frame. Explored temporal architectures to handle long and short-term context and address occlusions.
- Assisted in deploying a real-time trajectory prediction model (DROGON) onto a vehicle. Responsibilities included model fine-tuning with real-world data, optimizing pre and post-processing methods for efficiency, and adapting the inference pipeline for hardware constraints.

Qualcomm — San Diego, CA

Software Engineering Intern, Supervisor: Dr. Suhail Jalil — *Summer 2017, 2018*

- Created a C-sim for facial recognition hardware, converted existing code into C++.
- Produced a parsing script to optimize product testing for current and future engineers.
- Used machine learning on capacitive signals from touch screens to identify if a user was an adult or a child. Project was accepted to the Qualcomm Machine Learning Summit for Fall 2017.

RESEARCH EXPERIENCE

Piray Lab, USC — Los Angeles, CA

Graduate Researcher, Supervisor: Dr. Payam Piray — *Jun 2023 – Present*

- Building on Piray et al. LinearRL model of decision making in the brain. Developed an online method using temporal difference learning to learn the default representation (DR), which can be thought of as a cognitive map, while also retaining the works useful enhancements over its predecessors. Namely, the reuseability of the DR when the environment changes.
- Studying if stochasticity and volatility impact human choices on exploration and exploitation. Coded a novel task in html and javascript to test this hypothesis and deployed it onto a server for automated data collection. Using both classical data analysis and a probabilistic model to analyze data.
- Mentor undergraduate students in the lab, providing guidance and support in research projects and fostering their professional growth.

Center for Artificial Intelligence in Society (CAIS), USC — Los Angeles, CA

Undergraduate Researcher, Supervisor: Dr. Bistra Dilkina — *Feb 2021 – Jun 2021*

- Assisted in the implementation and testing of an unsupervised clustering and classification network parameterized by a Gaussian mixture model for camera-trap images.
- Tested our approach against current state of the art clustering benchmarks such as DEC and DeepCluster.

Neuro Imaging With Deep Learning Lab (NIDL), USC — Los Angeles, CA

Undergraduate Researcher, Supervisor: Dr. Hosung Kim — *Sep 2019 – Jul 2020*

- Implemented artificial brain aging on fMRI photos using current state of the art GAN models to identify neurodegeneration.
- Improved U-net and Capsule Net segmentation with the addition of multi-scale highlighted foregrounds for white matter hyperintensities.

- Established standardized image processing pipeline for MRI photos using a shell script with fsl commands.

Autonomous Networks Research Group (ANRG), USC
Undergraduate Researcher, Supervisor: Dr. Bhaskar Krishnamachari

Los Angeles, CA
Summer 2019
- Proposed novel ML solution to estimate vehicular communication ranges in dynamic systems.
- Collected and processed data extracted from the web. Used feature engineering techniques to generate more descriptive features.
- Pruned and compressed model to run efficiently on embedded hardware.

PUBLICATIONS

Conferences

Yi Xu, **Armin Bazarjani**, Hyung-gun Chi, Chiho Choi, Yun Fu "Uncovering the Missing Pattern: Unified Framework Towards Trajectory Imputation and Prediction" *CVPR 2023*

OUTREACH & SERVICE

USC Graduate Student Union (GSWOC-UAW Local 872)
Social Sciences and Psychology Steward

Los Angeles, CA
May 2024 - Present
- Elected as one of the 8 inaugural stewards for this section.
- Serve as a direct, and hopefully more personal, link to the graduate student union. Advocate on behalf of my coworkers as well as for the importance of joining the union.
- One of my main commitments is to help my coworkers through any problematic situations that may arise, and if needed to represent and guide my coworkers through the grievance process.

Cognitive and Computational Neuroscience Journal Club
Founder and Organizer

Los Angeles, CA
August 2023 - Present
- Founded the club to fill a gap in discourse that I noticed at my university. I got members from both the Psychology and Neuroscience departments.
- Organize and facilitate bimonthly paper presentations and discussions.
- Reach out to guest speakers at USC to organize brown bag research talks.

Curriculum and Training Committee
Committee Member

Los Angeles, CA
Agust 2023 - Present
- One of the subcommittees for the Psychology department's effort on pushing forward diversity, equity, and inclusion. This committee is focused on inclusive research methods, teaching practices, and curriculum development.
- I suggested and am helping set up a Psychology department podcast. The idea is to have it be a general resource for the Psychology department while we also interweave greater discourse related to diversity, equity, and inclusion.

The Social Impact Center
Volunteer

Los Angeles, CA
2023
- Volunteer with their expungement events. Sit down with previously convicted individuals and help them draft a formal letter demonstrating growth in their life since their conviction. The letter is then mailed to a judge where they can hopefully get their record expunged.
- I also help out with more clerical duties during the event as needed. Such as intake and outake or just walking around and making sure everybody is comfortable.

Room to Read USC
Club Volunteer

Los Angeles, CA
2016 & 2017
- Club at USC that partnered with a local school to help mentor and supervise students after regular school hours.
- I would go 1-3 times a week, depending on my schedule, and help groups of students with their homework. Or, I would occasionally have 1 on 1 times with certain students that could use the extra attention.

SKILLS

Languages: Python, C/C++, Java, JavaScript, SQL, MATLAB

Technologies: MySQL, Git, Docker, Amazon Web Services, Linux

Libraries: PyTorch, TensorFlow, OpenCV, Scikit-Learn, Keras, NumPy, Pandas, Matplotlib, Gymnasium