Elton Martinez

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Education

- **University of Texas at Austin** — Austin, TX
  B.S. in Psychology with Honors, Minor in Computer Science; GPA: 3.8 — *Aug. 2021 – May. 2025*

Experience

Developing Intelligence Lab — Austin, TX

Lab Technician — *May 2025 - Present*

- **Software Development**: Developed MATLAB functions to manipulate, analyze, and visualize behavioral time-series data aligned with research objectives. Maintained the lab's MATLAB repository.
- **Image Embeddings**: Generated ResNet-based embeddings for view-dependent images across 27 categories. Reduced embeddings to two dimensions using multidimensional scaling and applied k-means clustering. Compared unsupervised clusters to ground truth, achieving high alignment.
- **Research Assistant Manager**: Assigned tasks to three undergraduate research assistants and monitored progress to ensure timely completion of computational projects.

Computational Research Assistant — *Aug 2023 - May 2025*

- **Object Detection for Experimental Studies**: Built a dataset and fine-tuned YOLOv8 using Ultralytics in Python to detect 27 custom objects from egocentric view. Derived time-series features including detection size, distance to center, and category.
- **Software Development**: Developed MATLAB functions to create short videos showing desired behavioral moments from experimental data.

Data Science Intern — *July 2023 - Aug 2023*

- **Data Analysis of Experiment Results**: Processed raw eye-tracking data into structured features using MATLAB and Python. Applied unsupervised learning (Random Forest, k-means) for participant classification. Presented exploratory findings to lab members.
- **Software Development**: Authored documentation for the lab's MATLAB repository to support research workflows.

Projects

- **Controlling NAO through Python**: Built a Python repository leveraging SoftBank Robotics SDK, NumPy, and OpenCV to control actuators, speech, and vision. Implemented higher-level behaviors such as object tracking using image processing and a fine-tuned YOLOv8 model.
- **Randomly Exploring Tree for Path Planning of Kilobot**: Implemented RRT algorithm in Python to compute collision-free paths. Exported node graph to CoppeliaSim for motion simulation of Kilobot.

Skills

- **Proficient**: Matlab, Python, Machine Learning, Deep Learning, Image Processing, Git, Numerical Computing, Natural Language Processing, Plotting and Visualizations, Data Structures and Algorithms
- **Comfortable**: C++, CoppeliaSim, Reinforcement Learning, Large Language Models, HTML, SQL,

Publications

Kaplan, B.E, **Martinez, E.**, & Yu, C. (2025). Using Head-Mounted Eye Tracking to Examine Infant Face Looking During Naturalistic Freeplay. Proceedings of the Annual Meeting of the Cognitive Science Society, 47. Retrieved from https://escholarship.org/uc/item/7z48j6zc