José Rojas

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"I am seeking thesis advisors and research opportunities in the fields of machine learning related to autonomous systems, computer vision and NLP. My goal is to expand my experience in formal research and become an active researcher and contributor in these fields."

Education

University of Texas at Austin - MS Computer Science, machine learning concentration (graduation in 2024)
University of Illinois Urbana-Champaign - BS Computer Science - GPA 3.8/4.0
Udacity - Autonomous Vehicles Certificate (9 month program: deep learning, control theory, system integration)
UC Berkeley Extension - Digital Signal Processing coursework

Experience

Independent Autonomy Related Projects and Research *(2018 - 2022)*

- **VizViewer** (https://vizviewer.com) - building a SaaS solution for data aggregation, cataloging, analytics, and visualization for multi-modal datasets. *Published article in 'Towards Data Science': https://bit.ly/3zrp4ax*

- **OpenCaret** - open source software & hardware research for developing after-marker drive-by-wire ADAS features. Developed and integrated a custom drive-by-wire kit for Hyundai Sonata vehicles, including control modules for steering and speed. Developed custom UI for ROS control systems. Researched camera, radar, LiDAR, IMU, RTK-GNSS in experimental vehicle platform for autonomous vehicle localization and mapping. Profiled in *New York Times*: https://nyti.ms/2Da9VgT.

- **Semantic Segmentation Research for Lane Keeping** - small research project applying semantic segmentation neural networks towards autonomous driving simulation (2018). https://tinyurl.com/y3flv76t

- **Didi Chuxing Challenge** - Lead team of engineers in a coding competition to develop a deep learning sensor fusion algorithm for processing LiDAR, camera, and radar sensor data from an AV to estimate poses of nearby obstacles. Placed in the top 25 teams globally out of 250 team submissions.

Redline Softworks, Independant Consultant - *Premium Software Development and Integration Services*
Software Solutions Developer and Consultant *(April 2009 - Present)*

Jose created a consultancy dedicated to assisting companies in delivering to market new software and hardware products.

- **Element Science, Inc.** (https://elementscience.com) 2 year contract; Full stack development for Bluetooth enabled FDA approved Class 3 life-saving wearable defibrillator for patients susceptible to cardiac arrhythmias. Developed HIPAA compliant ECG data acquisition cloud infrastructure from IoT wearable using Swift, Bluetooth 4.2, AWS, Python, and Kubernetes.

- **Caban Systems, Inc.** (http://www.cabansystems.com) - 1 year contract; developed scalable cloud services for solar battery telemetry data (ingress API, database infrastructure) using AWS and Python; developed customer-facing front end dashboard using HTML5/Javascript.

- **Sano Intelligence, Inc.** (http://www.sano.co) - 2 year contract; lead mobile application development for the initial launch of wearable glucose sensor product; built iOS mobile application, helped define product UX, backend architecture, and investor demonstrations, resulting in seed funding of $6M.

- **Dash Robotics, Inc.** (https://en.wikipedia.org/wiki/Dash_Robotics,_Inc) - 2 year contract, lead iOS and Android application development for a bio-inspired, programmable toy robot in partnership with Mattel; applied expertise in IoT product development to build product features for initial launch, such as control logic, programmable behaviors, scripted actions for games, and a user programming interface; worked with firmware engineers to implement core features and Bluetooth communication.

- **Toyota, Inc. (Robotics Division)** - mobile platform prototyping and product development for assisted vision wearable necklace for the visually impaired; built the primary architecture of a hardware simulator and Android application. http://www.toyota.com/usa/story/effect/projectblaid.html

- **August, Inc.** (http://www.august.com) - 2 year contract, founding member, mobile UX and product development for launch of IoT August Smart Lock; launched website, pre-sale e-commerce store and back end that processed over $2M in pre-orders; developed Android mobile application; helped define initial product functionality in real world scenarios through R&D and productization of security protocols, OTA firmware updates, and proximity based unlocking features; define analytics metrics for tracking user engagement; deployment of initial version to Android Play with a 4 out of 5 rating.

- **National Library of Medicine** (https://pillbox.nlm.nih.gov/) - lead development of Pillbox, web application to search for the most accurate information on pharmaceuticals; HTML5, Node.js, integration of Socrata APIs.

Genplay Games, Inc., *Game Publishing & Development*
Lead Software Engineer and Technical Director *(May 2004 - June 2009)*
Centerscore, Inc., *Game Publishing & Development*
Embedded Software Engineer *(October 2003 - April 2004)*

Developed original mobile game titles across hundreds of devices. Guided overall technical direction in the emerging mobile market. Focused on growing the company's core application technologies, hiring and managing the development team that developed key revenue-generating games with partners such as Namco, Inc.

Silicon Graphics, Inc., *Visual & Advanced Graphics Systems*
Software Engineer - Distributed Visualization (*August 2000 - Sept. 2003*)

Design and development of OpenGL VizServer, a client-server collaborative visualization middleware for SGI systems for remote screen sharing of 3D applications. R&D of software compression strategies and stereoscopic support; patents acquired based on my research (see Patent Section).

Beckman Institute - UIUC, *Knowledge Based Systems*
Undergraduate Researcher - Simulation & Visualization *(June 1999 - May 2000)*

Worked with UIUC researchers to design a virtual training simulation for Navy vessel damage control systems. Developed interactive UI and 3D model of vessel with rendering of fire, water, & smoke damage. Simulation was successfully deployed in Naval training classes and on U.S Navy vessels.

Papers

- ***[2022] A study of methods to address MNLI dataset artifacts in the Electra-Small LLM -*** *NLP Final Report https://tinyurl.com/nh99tjzb*

Articles

- ***Autonomous Driving Dataset Visualization with Python and VizViewer -*** *Published in Towards Data Science https://bit.ly/3zrp4ax*
- **Semantic Segmentation & Deep Learning for Autonomous Driving Simulation** - *Published in Towards AI* https://tinyurl.com/y3flv76t

Patents

- USPO #7659907 **- System and Method for Providing Dynamic Control of a Graphics Session**
- USPO #7769900B1 **- System and Method for Providing Interframe Compression in a graphics session**
- USPO #8046404B1 - **System and method for discarding frames of an image during transport across a network link**

Technical Skills

- Languages: C/C++, Java, Javascript, Python, Kotlin, Swift, Objective-C
- Platforms: Windows, OSX, Linux, Java, Android, iOS, ARM, Arduino, AWS, IoT
- Experienced with ROS (Robot Operating System), NVidia Hardware - TX2, Nano, CUDA
- Machine Learning: TensorFlow, Numpy, Scikit-Learn, PyTorch, Keras, Jupyter, Pandas, HuggingFace
- 3D Experience: OpenGL, OpenGL ES, WebGL, DirectX, Unity Engine
- Networking: Client/Server, Peer-2-Peer, HTTPS, SSL, Socket, UDP, WebRTC, Bluetooth 4.x
- Media: Data compression, MPEG, MP3, video streaming, and application streaming
- Stacks: Serverless, JAMStack, LAMP, Node.js
- Front-end: React, JSX, Vue, Webpack, Rollup
- Miscellaneous: HPC, Multi-threading, build environments, regression tests, continuous deployment and delivery