

JOSÉ ROJAS

Experienced AI researcher, software engineer with over 15 years experience, and patent inventor, specializing in autonomous systems, computer vision, and machine learning. Seeking opportunities to apply expertise in building innovative robotics and AI solutions.

Phone [\(415\) 376 7378](tel:(415)3767378)
Email jlorjas@utexas.edu
Home [San Francisco, CA](#)
Website j-rojas.github.io
Github github.com/J-Rojas
LinkedIn linkedin.com/in/jlorjas-swdev/

EDUCATION

- **MS Computer Science, AI & Machine Learning** University of Texas at Austin
- **BS Computer Science** University of Illinois, Urbana-Champaign
- **Autonomous Vehicles Certification** Udacity - deep learning, control theory, system integration

EXPERIENCE

Deep Learning Researcher | VITA Research Group, University of Texas | 2023 - 2024

Led research on neural network sparsity, leveraging Mixture of Experts in LLM and vision models.

- Evaluated over 10 research papers and validated experimental results. Led team of 3 researchers and facilitated collaboration between U. Texas and MIT. Published [technical report](#) based on experimental results.

Autonomy R&D Software Engineer | Redline Softworks | 2015 - 2022

Spearheaded development of professional client and internal projects, focusing on autonomous agents and robotics.

- **RL Agents [2022]** ([Video](#)) Led 3 engineers, developing deep RL network for a virtual hockey game using PyTorch. Individually trained subnetworks with policy gradients for strategic behaviors, then merged for reliability.
- **VizViewer [2020-2021]** ([Website](#)) Built a cloud-based toolkit for data visualization of multi-modal datasets. Developed interactive dashboards with real-time ROS data integration from LiDAR, camera, and telemetry data. Utilized MQTT, WebRTC, and ROS. Integrated into AV prototypes and demoed Lyft datasets. Published in [Towards Data Science](#).
- **OpenCaret [2018-2019]** ([Video](#)) Developed a custom drive-by-wire kit for Hyundai Sonata, integrating steering/speed PID and model based control modules. Integrated GNSS/RTK sensors in vehicle to drive 0.5 miles autonomously in controlled environments. Featured in [New York Times](#).
- **Semantic Segmentation Research for Lane Keeping [2018]** ([Video](#)) Applied CV research to develop semantic segmentation neural networks for autonomous driving simulation. Demonstrated lane keeping and boosted real-time performance by 10x using GPU acceleration. Published in [Towards AI](#).
- **Didi Chuxing Challenge [2017]** Led a team of 10 engineers in a global competition, developing a deep learning sensor fusion localization algorithm. Trained with LiDAR, camera, and radar sensor data. Achieved top 10% ranking among 250 teams worldwide.
- **Bosch Path Planning Demo [2017]** ([Video](#)) Coded C++ path planning algorithms, using physical motion constraints for smooth lane transitions. Achieved a 100% improvement in real-time path planning efficiency through algorithm optimizations.
- **Toyota, Inc. (Robotics Division) [2016-2017]** ([Website](#)) Prototyped a mobile app for a wearable vision-assist device, enabling visually impaired users to navigate indoor spaces using real-time computer vision, voice prompts, and audio feedback.
- **Dash Robotics, Inc. [2015 - 2018]** ([Video](#)) Led the development and release of iOS/Android apps for a programmable toy robot in partnership with Mattel, contributing to the successful sale of 100,000+ units globally. Invented scripted programming API for preprogrammed behaviors, along with real-time control and interaction.

Cloud Services and Mobile App Developer | Redline Softworks | 2009 - 2019

Provided consultancy services for ~20 projects and 10 startups, accelerating market delivery for software and hardware products.

- **Element Science, Inc. [2017 - 2019] ([Website](#))** Created full stack cloud infrastructure for a Bluetooth-enabled, FDA-approved life-saving wearable defibrillator. Enabled real-time ECG data processing, supporting over 1,000 patients. Engineered iOS application for real-time monitoring of ECG data via BTLE.
- **Caban Systems, Inc. [2019] ([Website](#))** Engineered scalable cloud services for solar battery telemetry data using AWS, Python, and Flask, improving data processing efficiency by 75%. Designed and engineered web dashboards using VueJS and Bootstrap for searching customer data logs.
- **Sano Intelligence, Inc. [2015 - 2017] ([Website](#))** Led iOS app development for wearable glucose sensors using BTLE4. Incorporated APIs for ingress/egress of glucose data. Implemented custom graphs and alerts for glucose monitoring. Built demos driving a \$6M seed funding round and acquisition by OneDrop.
- **August, Inc. [2013, 2014] ([Website](#))** Led web e-commerce and mobile app development for the launch of August Smart Lock. Developed e-commerce front-end and back-end, securing over \$2M in pre-orders. Created the Android app for controlling smart lock access control and security features, rated 4.5 stars on Google Play.

Lead Software Engineer & Tech. Director | Centerscore, Inc. & Genplay Games, Inc.

Directed a team of 12 engineers to develop custom frameworks, leading to the release of mobile titles across 100’s devices. Generated over \$5M in game revenue.

- Led technical direction for mobile game development, releasing popular titles like Garfield Poker and Galaga, with over 2 million downloads globally.

Software Engineer - Distributed Visualization | Silicon Graphics, Inc.

Developed OpenGL VizServer, a collaborative middleware solution for remote screen sharing of 3D applications. Improved software compression, reducing data transfer time by 75%. Delivered 6 SW versions to production.

- Acquired 3 patents for innovations in stereoscopic support and software compression (**Patent Numbers - USPO 7659907, USPO 7769900B1, USPO 8046404B1**).

| PAPERS

- **[2024] Analysis of Data Efficient and Budget Restricted Model Sparsity Training with Mixture of Experts** - Master Thesis (<https://j-rojas.github.io/files/masterthesis.pdf>)
- **[2022] A Study of Methods to Address MNLI Dataset Artifacts in the Electra-Small LLM** - NLP Final Project (<https://tinyurl.com/nh99tjzb>)

| SKILLS

- **Languages:** Python, Javascript, C/C++, Kotlin, Swift, Objective-C, Java, Go, Rust, MATLAB
 - **Hardware:** NVidia hardware and software, CUDA, Arduino, ESM32
 - **Platforms:** ROS, OSX, Linux, Java, Android, iOS, ARM, AWS, IoT
 - **Machine Learning:** TensorFlow, Numpy, Scikit-Learn, PyTorch, Jupyter, Pandas, HuggingFace, Spacy
 - **3D Experience:** OpenGL ES, WebGL, 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, Kubernetes
 - **Front-end:** React, JSX, Vue, Webpack, Rollup
 - **Processes:** HPC, Multi-threading and processing, build environments, regression tests, CD/CI
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