

Rajasekhar Josyula

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SUMMARY

Engineer delivering ultra-low-latency, mission-critical perception and neural infrastructure for Tesla's Full Self-Driving platform. Deep expertise in deterministic real-time vision systems, safety-critical embedded software, and fleet-scale autonomous validation.

EXPERIENCE

Staff Autopilot Software Engineer

Tesla **May 2022 - Present, Palo Alto, California**

- Design, implementation, and optimization of low-latency camera ingestion(sub-10 ms photon-to-NN camera pipelines) and processing stacks for FSD vehicles and Optimus robots, spanning sensor bring-up, calibration, and efficient frame delivery to perception neural networks.
- Drive seamless camera integration and comprehensive end-to-end testing for new vehicle platforms (Cybercab, Robotaxi, next-gen hardware), ensuring robust scalability from prototypes to high-volume production.
- Evolve real-time camera software stacks and port legacy platforms using C++20 and Qt, while enforcing strict determinism, multi-threading, and low-latency guarantees for driver monitoring and perception-critical features.
- Worked on end-to-end stability of Robotaxi camera and perception systems through vehicle-level integration, fault-tolerant frame routing, watchdog mechanisms, recovery paths, and rigorous real-world stress testing on production platforms.

Sr. Software Engineer, Autopilot

Tesla **February 2020 - May 2022, Palo Alto, California**

- Worked on camera bring-up and sensor evaluation for Model 3, Model Y, and Model S/X refresh; led Sony IMX sensor down-select and validation in lab and vehicle integration mules.
- Developed on vehicle-level image quality for Model 3/Y/S/X platforms: defined and executed lab test suites covering MTF/SFR, dynamic range, color accuracy (ΔE), flare/ghosting, veiling glare, and real-world scene fidelity.
- Maintained and extended the production C++ camera capture pipeline (Bayer processing → CCM → gamma → tone mapping → defect concealment), adding features and ensuring compatibility across hardware revisions.
- Optimized low-level C++ capture stack for sub-millisecond latency and deterministic timing, delivering clean frames to perception neural networks.
- Drove closed-loop image quality tuning using customer feedback and fleet data; refined color correction matrices and tone curves in C++, validated in factory integration tests, and deployed via OTA across the Model S/3/X/Y fleet.

Sensor Software Engineer, Autopilot

Tesla **May 2017 - February 2020, Palo Alto, California**

- Led factory camera calibration for vision-only autopilot suite, deploying end-of-line multi-camera extrinsic/intrinsic pipelines using ChArUco diamond boards with occluded-marker recovery and global bundle adjustment in embedded C++/OpenCL on high-volume production lines.
- Optimized embedded ISP pipelines for rapid auto-exposure/-white-balance convergence, adaptive temporal/spatial denoising, and MTF preservation up to Nyquist frequency with minimal aliasing and defect-pixel concealment.
- Owned camera intrinsic generation at contract manufacturers using temperature-swept ChArUco captures, computed high-order distortion models + focus-position tables, and programmed finalized intrinsic sets directly into module EEPROM for plug-and-play vehicle integration.

Software Engineer, Quality

Tesla **January 2016 - May 2017, Fremont, California**

- Drove continual product improvement for Model X firmware, Autopilot, and thermal issues by analyzing General Assembly, factory gate, and early-field failure data using Python, Tableau dashboards, and Flask-based internal tools in cross-functional war rooms.
- Performed root-cause analysis on Model S/X authentication and security system failures with Python log parsers and Tableau visualizations; implemented corrective actions and OTA countermeasures that eliminated production-line and field escapes.
- Built Python/Flask data pipelines to correlate vehicle telemetry with Consumer Reports and JD Power metrics, enabling targeted hardware/software modifications.

Electrical Engineering Intern

Saudi Electricity Company **April 2011 - June 2011, Jeddah, Kingdom of Saudi Arabia**

- Executed hi-pot, contact resistance, protection relay secondary injection testing on 11 kV MV / 400 V LV circuit breakers during commissioning.
 - Analyzed and traced power/lube oil/cooling/excitation systems of 100+ MW-class gas turbine generators (Frame 6B/9E equivalents).
 - Verified 132 kV SF6 GIS and 11 kV switchgear insulation integrity (Tan δ , PD) and updated single-line diagrams during substation energization.
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EDUCATION

Masters in Information Systems and Security

Minor in Cybersecurity · University of the Cumberland · Williamsburg, KY · 2017 · 4.00

Masters in Electrical and Electronics Engineering

Minor in Embedded Systems · Lamar University · Beaumont, TX · 2016 · 3.6

Bachelors in Electrical Engineering

Minor in Robotics · Amrita University · Coimbatore, India · 2013
