

Janani Manathattai

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EDUCATION

University of California Los Angeles, B.S. in Mechanical Engineering

GPA: 3.5 / Expected Graduation: 2029

TECHNICAL SKILLS

Mechanical Design & Manufacturing: SolidWorks, Mechanical Assemblies, Engineering Drawings, Mechanism Design, Kinematics, Electromechanical Systems Integration, Robotic Actuation, Motor and Servo Systems, Lead-Screw and Gear-Driven Motion, Design for Manufacturability, Tolerance Analysis and Stack-Up, Material Selection, Manufacturing Process Planning

Instrumentation & Engineering Analysis: LabVIEW (DAQmx and SubVI Development), MATLAB, Sensor Data Acquisition, Pressure Transducer Integration, Sensor Calibration, Signal Conditioning, Real-Time Data Monitoring, Digital Filtering, Mathematical Modeling, System Debugging

Software & Programming: Python, C++, Java, React, TypeScript, Node.js, Fastify, PostgreSQL, API Design, Database Architecture, Azure

Product Development: Requirements Gathering, Technical Specification Development, Design Documentation, Verification Planning, User-Centered Design, Cross-Functional Collaboration, Technical Presentations

EXPERIENCE

EZ Labs / AI Product Engineering Intern (Remote)

JUN 2026 - PRESENT

- Partnered with internal stakeholders to gather requirements, map user workflows, define technical specifications, and prioritize product features, owning development from discovery through deployment across React, TypeScript, Node.js, Fastify, PostgreSQL, and Azure.
- Built a SaaS subscription management platform with searchable dashboards, license assignment and reassignment workflows, renewal tracking, automated expiration notifications, unassigned-seat monitoring, and audit logging to centralize internal software asset management.
- Developed a healthcare claims intake and validation pipeline for X12 837 claim files, implementing HTTP-based EDI ingestion, claim-state tracking, configurable SNIP validation, generated X12 999 acknowledgments, and machine- and human-readable error reporting.
- Architected and deployed containerized applications using Azure Container Apps, Azure Static Web Apps, PostgreSQL, Docker, and enterprise authentication, incorporating stakeholder feedback and expanding automated unit and integration testing to support reliable production workflows.

UCLA David Geffen School of Medicine - Radiation Oncology Laboratory / Lab Assistant

MAY 2023 - JUN 2026

- Developed LabVIEW-based DAQ systems integrating P409X transducers to capture and analyze real-time respiratory pressure data, enabling visualization of human breathing patterns and supporting respiratory motion research.
- Built reusable LabVIEW SubVIs for sensor calibration, signal conditioning, voltage-to-pressure conversion, and waveform processing while optimizing Front Panel controls and data flow to provide low-latency monitoring of live breathing metrics.
- Created MATLAB algorithms to automate 5DCT scan validation, sorting patient imaging datasets, detecting registration errors, and identifying false positives to improve data integrity and support computational radiology workflows.
- Collaborated with graduate researchers to enhance computational models, optimize medical imaging visualization tools, update legacy code, and establish documentation standards that improved research software maintainability and workflow efficiency.

Boeing / Core Analytics & Maintenance Department Intern

JUN 2024 - AUG 2024

- Analyzed Boeing 787 maintenance manuals, historical service records, and customer-reported issues to identify recurring installation challenges, improve issue classification, and support engineering decision-making.
- Partnered with maintenance engineers to understand technician workflows and translate operational pain points into product requirements, designing an improved damaged-part routing process tailored to how engineers access and interpret maintenance data.
- Enhanced data pipelines supporting Generative AI models by refining maintenance record retrieval logic, surfacing more relevant historical data, and improving processing efficiency by 20%.
- Collaborated with software engineers and cross-functional stakeholders to validate and demonstrate an internal Generative AI application, communicating technical findings and workflow improvements to project teams.

PROJECTS

Automated Quality Sorting Manipulator (AQSM)

SUMMER 2026

- Collaborated in a four-person team to develop a 29-part SolidWorks CAD system for conveyor-based item sorting, integrating dual lead-screw gantries, wheel-driven translation, a 3-DOF articulated arm, and a motorized gripper.
- Defined the system's electromechanical power architecture, including distributed motor and servo actuation, AC-to-DC power conversion, voltage regulation, independent axis control, and synchronized gantry motion to prevent skewing and binding.
- Developed the DFM and tolerance strategy for machined 1060 aluminum and 3D-printed ABS components, specifying modular fabrication with standard hardware and tighter ± 0.002 in control at bearing, shaft, lead-screw, motor-mount, driven-wheel, and arm-pivot interfaces.
- Translated first-principles lead-screw and actuator analysis into design recommendations, identifying 22.7% transmission efficiency and 1.94 mm/s traverse speed as cycle-time constraints and proposing a coarser or multi-start lead screw with physical testing for backlash, payload capacity, and positioning accuracy.