SRIJAN DUGGAL

Greater Boston Area • srijanduggal17@gmail.com • (504) 239 2982 • srijanduggal17.github.io • US Citizen • Eagle Scout

SUMMARY

Creative and adaptable robotics engineer with an entrepreneurial spirit and proven track record of leading teams on complex problems. Highly passionate about continual learning, data-driven decisions, collaboration, and creating a positive culture.

EXPERIENCE

Sr. Robotics Software Engineer – Autonomy, Controls, and Perception — ***Manchester, NH***

DEKA Research & Development — *August 2022 — Present*

Automated Wet-Lab Device – Controls Lead (3 months)

- Scoped project through customer visit, user stories, and system modeling (activity/architecture diagrams)
- Led a team of 4 to develop POCs addressing key controls/perception risks
- Built POCs for Mask-RCNN pipeline (auto-labeling, training, deployment) and sub-mm visual servoing with 6-DoF robot arm

Automated Beer-Pouring Machine – Software Architect / Controls Lead (4 months)

- Co-led a cross-functional team of ~20 on a tight-timeline to deliver full product. Provisional patent filed.
- Enabled parallel development by defining SW architecture/interfaces and controls strategy (tap actuation, cup grasping/tilting)
- Set up containerized dev environment, Debian deployment, process startup via systemd, and logging infrastructure

Autonomous Vehicle – Perception & Autonomy (1.5 yrs)

- Led a team of 7 to bring 2.5D terrain estimation into the autonomy stack via lit review, parallel experimentation, and iterative reprioritization. Provisional patent filed.
- Built high-res (5cm) occupancy grids using sensor fusion (LiDAR, Stereo Cameras, Radars) to reduce narrow-space indoor navigation failures by 5x using multithreading and GPU kernels
- Accelerated debugging of edge-case robot behavior by adding offline reproducibility

Other Projects – Motion Planning, Controls, Computer Vision

- Implemented controls stack for 2-axis gimbal and PPR gantry using real-time frameworks, inverse kinematics, and behavior trees
- Designed blood temp controller for organ preservation device using thermal modeling and Monte Carlo, cutting warmup time 60%
- Developed multi-view camera CV approaches to reduce false positives to 1% for drug-delivery manufacturing defect detection

Hip Exoskeleton Research Team Lead — **Atlanta, GA**

Georgia Tech, *Exoskeleton and Prosthetics Intelligent Controls Lab* — *Jan 2019 — May 2021*

- Trained deep learning models for gait-phase estimation using TensorFlow and Keras (Published in IEEE RA-L)
- Developed a knee-exo controller to increase human carrying capacity (filtering, controls on Raspberry Pi with Python/ROS)

Managing Partner & Lead Engineer — **Miami, FL**

Eifosoft Solutions, LLC — *May 2018 — Present*

- Built web app, main server, and microservices for 2000+ user tournament management software with React, Node.js, and AWS

Business Strategy Advisor — **Remote**

Private Manufacturing Company *(~$8M Revenue)* — *March 2025 — Present*

- Partnered with owner to analyze financials, understand profitability issues, set net income targets based on ROE, and restructure sales incentives around high-margin products

ADDITIONAL EXPERIENCE

R&D Test Engineering Intern – *Intralox LLC,* *Logistics and Material Handling* — **Hanover, MD**

- Modeled friction behavior to inform next-gen controls design. — *May — August 2021*

Modeling and Simulation Intern – *Automation Intelligence LLC,* *Digital Twins* — **Atlanta, GA**

- Built Emulate3D digital twins for robot-based sorting; delivered client demos and optimization reports. — *May–Aug 2020*

Senior Design Project – *Georgia Tech* — **Atlanta, GA**

- Designed low-cost neonatal incubator for local fab w/ Dr. in Ghana using analog controls & SolidWorks — *Jan 2021 — May 2022*

EDUCATION

Georgia Institute of Technology — **Atlanta, GA**

MS in Mechanical Engineering (Automation and Robotics) **GPA 4.0** — *May 2022*

BS in Mechanical Engineering, Minor in Robotics **GPA 4.0** — *May 2021*

PUBLICATIONS

I. Kang, D. D. Molinaro, S. Duggal, et al. *Real-Time Gait Phase Estimation for Robotic Hip Exoskeleton Control During Multimodal Locomotion.* IEEE Robotics and Automation Letters, vol. 6, no. 2, pp. 3491-3497, 2021.

SKILLS

Development: C++, OpenCV, ROS, SYCL/DPC++, Ubuntu/Linux, PyTorch, Docker, gRPC, AWS, Python, Javascript, MySQL

Design: System Design, Sequence & Architecture diagrams, Object-Oriented Design, User stories, PlantUML, SolidWorks

Robotics: Control systems, classical computer vision, dynamic modeling, multithreading/GPU kernels, Kalman filtering, CNNs