Pravin **Dangol**

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Education

Northeastern University — *Boston, MA*
M.S. Electrical Engineering — *Dec 2021*
- Concentration in Computer Vision, Machine Learning and Algorithm

St. Cloud State University — *St. Cloud, MN*
B.S. in Mechanical Engineering — *Dec. 2016*
- Graduated Summa Cum Laude in the honors program.

Work Experience

Intrinsic AI, an Alphabet company — *Mountain View, CA*
Roboticist — *May 2022 - Present*
- Developed vision-based grasping and manipulation algorithm for pick and place applications.
- Created a synthetic data generation pipeline for end-to-end grasping.
- Benchmarked force feedback controller to verify performance and integrity software stack.

Vicarious Inc — *Union City, CA*
Robotics System Software Engineer — *Jan 2022 - May 2022*
- Deployed applications for vision-guided warehouse automation on manipulator robots, coupled with HIL/SIL system integration test.
- Containerized application for faster deployments, and automated container build and deployment on robot lines.
- Simulated high-level robot-line interactions to optimize performance and maximize peak throughput.

The Mathworks Inc. — *Natick, MA*
Software Engineer Intern — *May 2021 - Sept 2021*
- Involved in the development of DDS/ROS middleware toolbox for the Simulink product line.
- Projects involve auto-generating and building C++ code from Simulink models for all supported vendors, which can be deployed by users.
- Created unit tests to check for failure and ensure generated code matched DDS standards.
- Assisted with creating an inference model to predict whether individual tests are likely to pass or fail given a changelist.

SiliconSynpase Lab, Northeastern University — *Boston, MA*
Research Assistant — *Sept. 2018 - May 2021*
- Led projects that deal with the design and control of bio-inspired legged and aerial robots.
- Designed and assembled a lightweight quadrupedal robot. Implemented agile walking gaits through state estimation, motion planning, and hierarchical control strategies; deployed on the hardware through a real-time OS.
- Implemented a robust closed-loop controller with optimized dynamic gaits for a thruster-assisted bipedal robot. Designed running and walking gaits based on the Hybrid Zero Dynamics framework.
- Created data-driven models to classify flapping patterns and estimate unknown aerodynamics forces acting on the wings of a flapping wing robot.

Electrolux — *St Cloud, MN*
Product Care Engineer — *Jan. 2017 - Jul. 2017*
- Managed and led projects aimed at increasing reliability, quality, and reducing the manufacturing costs of commercial kitchen appliances.
- Designed mass-produced components to extend the product life cycle of the existing appliance line.
- Managed sub-projects dealing sheet metal fabrication, injection molding, extrusion, thermoforming, and tooling required for large volume production.

TLC Electronics Inc. — *St Paul, MN*
Automation Intern — *May 2016 - Aug. 2016*
- Automated assembly lines to improve build times for parts used in the electronics and medical device industry.
- Prototyped and designed test fixtures to increase efficiency in the assembly process and electrical testing.

Hutchinson Technology Inc. *Hutchinson, MN*

Research and Development Engineer Co-op *Jan. 2015 - Aug. 2015*

- Involved with design, process development, and research for shape-metal alloy based optical image stabilizers used in smart-phones.
- Worked on design for manufacturability of electro-mechanical assemblies, designed fixtures, tested and analyzed parts to optimize performance and power consumption.

Skills

Robotics	Kinematics & Dynamics modeling, Motion Planning, ROS, Gazebo, AWS RoboMaker
Machine learning	Reinforcement learning, PyTorch, Tensorflow, CNN, Transformers, OpenCV, Pruning
Controls & State Estimation	Linear, Optimal, MPC, Robust, Adaptive, Non-linear, Kalman filter
Programming	C, C++, Python, MATLAB, OOP, Unit testing

Publications

- P. Dangol, E. Sihite, and A. Ramezani, "Control of Thruster-Assisted, Bipedal Legged Locomotion of the Harpy Robot," *Frontiers in Robotics and AI*, 2021
- E. Sihite, P. Dangol and A. Ramezani, "Optimization-free Ground Contact Force Constraint Satisfaction in Quadrupedal Locomotion," *Control Systems Society Conference (CDC)*, Austin, Texas, 2021
- A. Ramezani, P. Dangol, E. Sihite, A. Lessieur, and P. Kelly, "Generative Design of NU's Husky Carbon: A Morpho-Functional, Legged-Aerial Robot," *International Conference on Robotics and Automation (ICRA)*, Xi'an, China, 2021
- P. Dangol, A. Lessieur, E. Sihite, and A. Ramezani, "A HZD-based Framework for the Real-time, Optimization-free Enforcement of Gait Feasibility Constraints," *International Conference on Humanoid Robots (Humanoids)*, Munich, Germany, 2021
- E. Sihite, A. Darabi, P. Dangol, A. Lessieur and A. Ramezani, "An Integrated Mechanical Intelligence and Control Approach Towards Flight Control of Aerobat," *American Control Conference (ACC)*, New Orleans, LA, 2021
- K. Liang, E. Sihite, P. Dangol, A. Lessieur and A. Ramezani, "Rough-terrain locomotion and unilateral contact force regulations with a multi-modal legged robot," *American Control Conference (ACC)*, New Orleans, LA, 2021
- E. Sihite, P. Dangol and A. Ramezani, "Unilateral Ground Contact Force Regulations in Thruster-Assisted Legged Locomotion," *International Conference on Advanced Intelligent Mechatronics (AIM)*, Virtual, 2021
- P. Dangol and A. Ramezani, "Performance and Robustness Satisfaction in a Thruster-assisted Legged Robot," *International Federation of Automatic Control (IFAC)*, Berlin, Germany, 2020
- P. Dangol, A. Ramezani and N. Jalili, "Performance satisfaction in Midget, a thruster-assisted bipedal robot," *American Control Conference (ACC)*, Denver, CO, 2020