Adam Lastovka

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Education

University of Waterloo, Canada
Bachelor of Applied Science in Mechanical Engineering - 92% GPA   2021 - Expected Apr 2026

Skills

Programming Languages: Python, MATLAB, C++, Javascript, Git
Software & Tools:: Solidworks, AutoCAD, ANSYS, Abaqus, AutoHotkey
Technical: Software Automation, Circuit Design, 3D Printing, Scientific Imaging
Languages: English C2, Czech C2 , Spanish B1

Work Experience

Cornell University / R&D Engineering Intern   May 2024 - Aug 2024
• High precision systems design, control system development, and process optimization for time-resolved protein crystallography instrument. Embedded programming of microcontrollers and circuit design.
• Led investigation into drop dispensing techniques utilizing stroboscopic imaging and precision motion control.
• Pioneered the development of automatic characterization and testing routines, enabling the first-ever measurement of uncertainties in the field with <1ms accuracy.

University of Waterloo / Undergraduate Research Assistant   Jan 2024 - Apr 2024
• Developed adaptive path following algorithm for 7DOF mobile manipulator using MATLAB.

Czech Academy of Sciences - HiLASE Centre / Laser Micromachining Intern   Aug 2023 - Dec 2023
• Developed wave propagation simulation for model-based design and verification of micromachining processes.
• Design and alignment of precision optical systems with diffractive optics for sub-micron machining with IR laser.
• Implemented novel phase retrieval and adaptive mask optimization ML algorithm for beam profile shaping.
• Applied machine learning knowledge to develop CNN and GAN neural networks in python using PyTorch reaching 98% accuracy for image classification enabling automated process tuning.

Aero Vodochody Aerospace / Control Design Intern   May 2022 – Aug 2022, Jan 2023 - Apr 2023
• Developed 6DOF non-linear simulation of L159 in MATLAB using OOP enabling future model-based design.
• Designed autopilot system achieving MIL-F-8785c Level 1 compliance, laying the groundwork for future projects.
• Employed non-linear system identification techniques to characterize engine behavior with 95% accuracy.
• Integrated aircraft model in HIL simulator to validate controller behavior after embedded implementation.

Project Experience

Waterloo Aerial Robotics Group / Embedded flight systems team   May 2023 - Present
• Developing Simulink simulation of fixed wing drone for SIL and HIL simulations to verify embedded C code.
• Estimating stability and control derivatives using DATCOM and flight test system identification.

Waterloo Rocketry Team / Propulsion team   Aug 2021 - Dec 2023
• Designed prototype bipropellant injector valve, hand calculated stresses and safety factors and verified with FEA, sourced components from manufacturers. Injector valve has been successfully used in 18+ cold flow tests.
• Designed and manufactured test stand for liquid system testing drastically speeding up testing procedures.