JATIN MAYEKAR

jatinmayekar27@gmail.com | linkedin.com/in/jatin-mayekar | Portfolio Presentation | Me as a language model

Passionate, knowledgeable, & innovative! I bring a 'hacker spirit' to my role as a Robotics Engineer & follow a 'by users, for users, with users' philosophy. Track record of 2.5 years of applications engineer experience, a U.S. patent, & a publication in IEEE Transactions on Robotics.

Education | **M.S. Mechanical Engineering, Robotics** | University of Colorado Boulder (CU Boulder) | USA | 2018-20 | 3.64 /4.00

Skills | Code: Python, RAPID, RobotStudio, MATLAB, Linux, Git, ROS, C++ | Mech: SolidWorks, 3D Printing, CAD | Elec: Altium, Raspi, SPICE

Work Experiences

Robotics Applications Engineer | ABB Robotics | USA | Jun 21 – Dec 23

- Led design & programming of ABB's first collaborative robot YuMi for PCB assembly; Reduced cycle time by 40%
- Designed versatile, robust & rapid 3D printed finger optimized for range of electronic components(10 mm) & aiding in vision calibration
- Implemented Cognex machine vision for identification of the deviation & orientation of small electronic ICs (+/- 0.01 mm & 0.1 degrees)
- Programmed autonomous failure detection & resolution with part rejection, process logging & comprehensive error handling
- Expertise in user-centric HMI/web apps, blending real-time data sync & comprehensive error monitoring, to
- Developed products with extensive testing for ease of user interaction, troubleshooting, & ease of new system configuration
- Tested extensively using a custom-designed PCB, ensuring robust performance for varied orientations & positions
- Employed SafeMove program with safety PLCs & laser scanners for industrial robot educational cells, enhancing human-robot safety
- Engineered merging of existing equipment webapps into ABB's HMI, reducing user learning curve & increasing sales prospects
- Authored RAPID code for micro-torque robotic screwdriving & laser welding, with networking protocols: TCP/IP, Ethernet/IP, & Profinet
- Excelled in rapid prototyping & sensor integration, utilizing CAD & 3D printing for comprehensive feasibility studies & proof of concepts
- Expertise in RobotStudio & VR for accurate simulations, aiding in client application feasibility & cycle time optimization, visualizations
- Represented ABB in 10 tech shows (Automate, IMTS, ATX, SWE) with multiple demos; communication & technical presentation skills
- Proficient in writing technical, marketing & sales documentation, involved & aiding in entire lifecycle of a product
- Hands-on training to a multitude of customers on RAPID programming, RobotStudio simulation, VR, & reach studies

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Project Experiences

Robotics Engineer | Soft Electro-Hydraulic Actuator Rolling Wheel Robot | Thesis | CU Boulder | USA | Jun 19 - Oct 20

- Designed & patented (US 17/746,427) a cylindrical-shell-bulging rolling soft robot wheel with 16 HASEL actuators,
- Published in IEEE Transactions on Robotics Journal (Vol. 38, Issue 5, Oct 2022), achieving 0.7 m/s max speed
- Collaborated with a PhD student, co-leading mechanical, electronic, & software development aspects
- Engineered 3D-printed modular chassis, cutting costs by 25% & assembly time by 59%
- Innovated 3D-printed snap-fit design for larger wheel construction within printer size limits
- Developed low-cost electronic components, including a voltage-controlled ring oscillator & PCB, improving actuator control
- Optimized HASEL actuators at 22.5° for effective locomotion, reducing wheel wobble to radial runout of 0.34 mm
- Built electro-mechanical test platform, achieving a minimum fall time of 0.53 sec for HASEL actuators
- Solved electronic synchronization challenges between Teensy board & current regulator IC, boosting robot reliability
- Developed software pipelines in Python, MATLAB, & C++ for data collection & actuator control, processing 32-bit data at 1 kHz
- Implemented real-time communication systems in C++ & embedded C with FreeRTOS for precise control & data handling
- Integrated Motive-OptiTrack for tracking robot movement (+/- 0.043 mm), aiding in precise model validation & performance evaluation
- Executed comprehensive performance characterization of HASEL wheel, integrating sensors for real-time monitoring & analysis
- Documented the project extensively, aiding in academic contribution & patent filing

Lead Robotics Engineer | Autonomous Warehouse Robot | CU Boulder | USA | Jun 19 - Dec 19

- Led development of autonomous warehouse robot with vision-based control & automated fork pickup for package handling efficiency
- Scripted vision feedback PID control in Python & OpenCV, motor control in C++ & MQTT for Raspi-Raspi wireless communication
- Deployed Dijkstra algorithm in Python for efficient robot pathfinding
- Simulated Kalman filters (EKF) & Adaptive Monte Carlo Localization (AMCL) in Gazebo, ROS & C++ on Linux, aiding sensing & localization