Shantanu Nitin Ghodgaonkar

shantanu-ghodgaonkar.github.io | linkedin.com/in/s-n-g | shantanu.ghodgaonkar@gmail.com | +1 (929) 922-0614

TECHNICAL SKILLS

Control Systems: PID Control, LQR Control, Model Predictive Control, Numerical Optimization, PLC Ladder Logic
Robotics Fundamentals: 3D and Epipolar Geometry, Linear Algebra, Kinematics, Dynamics, Probability, Statistics
Robotics Platforms: Universal Robotics UR16, CoppeliaSim, Nvidia Jetson, Raspberry Pi, Arduino, ESP32
Programming Languages: Python, C++, C, Java, HTML, CSS, JavaScript, XML
Frameworks & Libraries: PyTorch, ROS Humble, OpenCV, SciPy, Pinocchio, Simulink, MATLAB Robotics Toolbox
Tools & Others: Git, Subversion, CUDA, Jira, LabVIEW, LPKF CircuitPro, Altium, Eagle, KiCad, Overleaf

EDUCATION

New York University, Tandon School of Engineering   *Sep 2023 - Present*
Master of Science in Mechatronics, Robotics and Automation Engineering
Relevant Coursework: Robot Localization & Navigation, Robot Perception, Reinforcement Learning & Optimal Control for Robotics

Visvesvaraya Technological University, Bangalore Institute of Technology   *Aug 2017 - Aug 2021*
Bachelor of Engineering in Electronics and Instrumentation Engineering
Relevant Coursework: Control Systems, Virtual Instrumentation, Digital Image Processing, Neural Networks & Fuzzy Logic Systems

EXPERIENCE

Adjunct Professor | New York University | NY, USA   *Jun 2024 - Present*

- Instructed the Automatic Control Laboratory (ME-UY 3411), focusing on PC-based data acquisition, real-time control systems, and control theory for both linear and non-linear systems.
- Emphasized practical applications of PID and LQR control using MATLAB and Simulink.
- Guided students in programming a UR16 robotic arm, highlighting path planning and error handling.
- Spearheaded development of control algorithms for a 3D-Printed 7-DOF hexapod robot, leveraging numerical optimization.
- Optimized the robot's foot design by analyzing mechanical CAD drawings, enhancing traction and load distribution.
- Designed the hexapod's electrical and computing subsystems through the development and validation of electrical schematics and PCB Design prior to manufacturing, ensuring robust system integration.
- Introduced Poke-Yoke principles to enhance reliability and reduce common assembly errors in the electrical design processes.
- Scalable Trajectory Optimization, Motion Planning algorithms developed for the Hexapod can extend to humanoid robots.
- Utilized MuJoCo within CoppeliaSim for comprehensive robot simulations, validating precomputed gait patterns and reducing physical testing time by 30%, upon deployment on the real robot.
- Currently implementing multi-threaded vision and contact rich Model Predictive Control algorithms, improving the robot's interaction with complex environments, using ROS Humble.

Software Engineer | Bosch Global Software Technologies | Bengaluru, India   *Sep 2021 - Jul 2023*

- Developed and maintained Java-based Automotive Diagnostic Tools for ODX data processing & automation.
- Built an ANTLR-based A2L parser for Daimler, completing the project 4 months ahead of schedule.
- Lead developer and customer-facing representative for INEOS, cutting development time by 70% with software automation.
- Created internal software automation tools that sped up ODX error resolution by 40%, for Fiat and Ford.
- Verified ODX data and conducted ECU simulation testing using OTX for McLaren.
- Supported the development of HTML, CSS, and JQuery-based screens for GRADE-X, reducing lead time by 10%.
- Authored diagnostic content for Flashing Over-The-Air (FOTA) product prototyping.
- Managed Agile sprints with Jira, maintaining a 90% on-time delivery (OTD) rate.
- Served as a Technical Interviewer and produced a training video library, reducing developer onboarding time by 30%.

Diagnostic Content Engineering Intern | Bosch Global Software Technologies | Bengaluru, India   *Mar 2021 - Jun 2021*

- Developed OTX screens for ECU simulation using HTML, CSS, and JavaScript to support diagnostic workflows.
- Integrated and validated OTX screens for vehicle testing in diagnostic systems.
- Collaborated with cross-functional teams to improve ECU simulation accuracy and streamline workflows.
- Participated in AUTOSAR, UDS and CAN Protocol Training.

Summer Engineering Intern | FluxGen Sustainable Technologies | Bengaluru, India   *Jul 2020 – Sep 2020*

- Developed a wireless temperature and humidity monitoring system using the ESP32 Wi-Fi & Bluetooth module.
- Created an Android app to display sensor data in real-time, improving monitoring accessibility.
- Developed an ad-hoc wireless system connecting patients and doctors, improving care during the COVID-19 pandemic.
- Designed wearable devices with ESP32 μC and LoRaWAN (RFM95) for wireless communication.
- Integrated sensors (MCP9808, MAX30102) to track body temperature, heart rate, and SpO2 levels in real-time.
- Implemented a meshed network using the ClusterDuck Protocol for real-time data collection between wearable devices.
- Developed web-based user interface using HTML and JS, for monitoring data from wearable devices.