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AMAR BHATT

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EXPERIENCE

Staff Robotics Control Engineer, Stryker Robotics – Weston, FL *Apr 2021 – Present*

Robotics and Controls (C, MATLAB, Python)

- Develop control algorithms in MATLAB and C for robotic solutions based on clinical requirements
- Implement system performance analysis scripts to measure stability, optical tracking, and output accuracy
- Design algorithms to maintain system performance in the event of mechanical degradation over time
- Tune PID controllers for system stability and performance
- Create bone preparation concepts for haptic constraints for unique implant geometries and cutting tools
- Write and maintain documentation to comply with FDA regulations, 510K submissions, and SDLC

System Integration

- Develop scripts for automated logging and analysis of output variables from a real-time robotic system
- Write and review system and sub-system level requirements
- Participate in cadaveric labs and collect VOC from surgeons and surgical staff

Patent Applications

- "Robotic Surgical System Including A Coupler For Connecting A Tool To A Manipulator And Methods Of Using The Coupler," U.S. Patent Application, 17/393,728, filed August 4th, 2021
- "Robotic Surgical System With Recovery Alignment" US Provisional Patent

Senior Robotics Control Engineer, Stryker Robotics – Weston, FL *Apr 2019 – Mar 2021*

Robotics and Controls (C, MATLAB, Python)

- Created real-time modules for haptic constraints in cartesian and joint-space
- Developed and implemented algorithms and safety mitigations for dynamic robot tracking
- Designed and executed engineering studies and DOEs to assess system and component performance
- Developed scripts and GUIs used for robotic control, bone preparation, tuning, and optical tracking

System Integration

- Implemented methods for robot characterization and calibration at sub-component and system levels
- Contributed to the design of test fixtures for sensors, sub-components, actuators, and overall system
- Developed processes for initial robot build analysis and continuous integration
- Investigated patterns of system or component failures observed on the manufacturing floor or in-field

Robotics Embedded Engineer, Stryker Robotics – Davie, FL *Aug 2017 – Mar 2019*

Software/Embedded Engineering (C, MATLAB, Python)

- Developed configurable surgical robot simulator for several surgical indications, instruments, and systems
- Architected application to aide in qualifying final production of robotic system and in-field maintenance
- Designed a firmware solution used for battery management of a network connected device
- Implemented in-field firmware upgrade protocol and firmware security features
- Created software interfaces for a variety of motor controllers with EtherCAT and Serial protocols
- Designed hardware and software for a handheld 3D mapping tool used to register anatomy to optical tracker

PUBLICATIONS & PROJECTS

Teaching Agents with Deep Apprenticeship Learning, RIT MS Thesis *Jun 2017*
Milpet – The Self-Driving Wheelchair, Electronic Imaging - Autonomous Vehicles and Machines 2017 *Jan 2017*
Myo Robotic Arm: Augmented control of a 5 DOF robotic arm using EMG *Dec 2016*
Vision-Based Control: Control system using OpenCV to navigate user drawn paths with mobile robot *Dec 2016*
Giving Independence Back to the Elderly and Physically Disabled, IEEE WNYISPW 2015 *Dec 2015*

EDUCATION

Rochester Institute of Technology (RIT), *Rochester, NY* *Sep 2012 – Aug 2017*

Master of Science in Computer Engineering – (3.905/4.000)

Bachelor of Science in Computer Engineering, Minor in Economics – Summa Cum Laude (3.893/4.000)