Shashank R

Mechanical Engineering, IIT Madras

Personal Info

Shashank Ramesh – ME16B164

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Team Anveshak

Education

2016-21[1]
Mechanical Engineering Dual Degree
Indian Institute of Technology Madras
CGPA: 9.29/10

2016
12th class
VVS SPPUC, Bangalore
Score: 97.33%, State Rank: 7

Course Work

- Modern Control Theory
- Design and Control of Serial Robots
- Principle of Autonomous Guidance
- Probability and Stochastic Processes
- Nonlinear Control Systems
- Artificial Intelligence in Manufacturing
- Introduction to Machine Learning

Skills

- Programming Languages (C, C++, Python)
- Mathematical Analysis Tools (MATLAB, Mathematica)
- Robotic Operating System (Node Scripting, Gazebo, Rviz)
- C programming for microcontrollers (Atmel Studio 7.0, Arduino)
- Mechanical Design (Autodesk Fusion 360, Solidworks)
- PCB Design (Autodesk Eagle)

Publications

Patent – Nagamanikandan G., Shashank R., Asokan T., "A Device for Adjusting Joint Stiffness", IDF No.1861.

Technical Experience

Variable Stiffness Actuator | Research Project Sept'18 - present
Nagamanikandan G, Prof. T Asokan

- Developed a novel variable stiffness rotary joint for enhancing the capabilities and safety of a collaborative robot
- Formulated the forward dynamics of a 3-DOF underactuated serial robot with variable stiffness joint in Wolfram Mathematica
- Implemented an offline optimal control for trajectory planning of the underactuated robot consuming minimum energy

F T Motors, Sina Mobility | Internship May'19 – Jul'19
Self Balancing Bike

- Implemented LQR control on a single axis Control Moment Gyroscope for the stabilization of a two wheeled vehicle
- Designed a compact embedded controller for the digital control of orientation and motion of a two wheeled vehicle

Team Anveshak | Team Lead Feb'17 – present
Faculty Advisor – Prof. T Asokan

- Conducted bootcamp sessions on robotics for 3 weeks covering concepts on robot kinematics, dynamics and control
- Supervised the implementation of a task space path planning algorithm for a 5R serial robot using python in ROS framework

iBoT Club, CFI[3] | Coordinator July'17 – March'18
Developing integrated knowledge base in Robotics

- Guided over ten teams towards building floor sweeping robots in the Cleaning Bots Session organized by CFI
- Conducted session on embedded system covering concepts like motor drivers, Arduino microcontroller and control algorithms

Achievements

- Team Anveshak placed 1st in Indian Rover Challenge 2019 among 18 teams including teams from Poland and Bangladesh
- Team Anveshak ranked 12th among 40 teams from all over the world in University Rover Challenge 2018 organized by Mars Society
- Awarded for Technical Excellence in Carbon Zero Challenge organized by IIT Madras and US Consulate for implementing the intelligent lighting system on three streetlights.
- Cleaning bots session set the Asia and India Book of Records for building 45 bots sweeping 750 sq.ft of area

[1] – Presently in 4th year [2] – Robotic Operating System [3] – Centre for Innovation