FRANCIS JOSEPH

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WORK

Motion Planning Engineer AutoX, San Jose, CA July 2018 - Present

Intern PlusAI, Palo Alto, CA June 2017 - September 2017
Steering calibration of a vehicle with Ackermann steering after synchronizing data from sensors
Build an ACC controller in C++
Developed a simulator to characterize the controller using python

Software Engineer ESI, Bengaluru, India August 2012 - July 2016
Developed features for the pre-processor for a finite element method solution involving linear algebra
Worked on vector and matrix calculations for applying loads to meshed surfaces
Code was developed in C++ and python was used to create automated testing scripts

EDUCATION

Master of Science University of California San Diego September 2016 - June 2018
Course Work: Robot Motion Planning, Principles of Artificial Intelligence: Probabilistic Reasoning and Decision Making, Estimation and Sensing, Linear Control Systems, Optimal Control, Robot Manipulation, Design and Analysis of Algorithms

Bachelor of Engineering PES Institute of Technology, Bengaluru, India September 2008 - June 2012
Course Work: Computer Programming, Kinematics of Machinery, Automotive Transmissions, Design of Machine Elements, Operations Research

PROJECTS

Learning to Control A Self-Folding Robot September 2017 - June 2018

- Collected data set for the self-folding robot using motion tracking cameras
- Approximated a function for one step prediction
- Compared closed loop PID with an MDP for trajectory tracking
- Manufactured the self-folding robot whose manufacturing process was published in IROS 2017

Autonomous Mail Delivery January 2018 - June 2018

- System integration of GEM golf carts running Autoware with the sensor suite on the vehicle
- Created 3D HD maps and semantic 2D map
- Wrote and tuned a throttle, brake and steering controller with dp planner

Learning Control of a Two-Link Arm April 2017 - June 2017

- Learned the controls of two link arm without knowledge of the model of the arm
- Used MuJoCo for simulation with OpenAi Gym and TensorFlow

• Gaussian model to detect red barrels • Kalman filter to track position of camera • Particle filter to localize a robot for SLAM • Strain sensors to map internal coral reef • RRT planner for a two-link arm
• RRT* planner for a 2D work space • JPS incremental planner for a 2D space.

SKILLS

• C • C++ • Python • MATLAB • ROS • TensorFlow • Keras • Pybullet • OpenAI Gym • MuJoCo • Robotics Toolbox (MATLAB) • OpenCV • G code • Excel (VBA/Macros) • LaTeX• GIT • SVN Subversion • Linux
• Windows