

Akshay Kumar

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EDUCATION

WORCESTER POLYTECHNIC INSTITUTE

MS IN ROBOTICS ENGINEERING

Expected May 2019 | Worcester, MA
GPA: 4/4 (I Sem)

MNIT JAIPUR

B TECH. IN ELECTRICAL ENGINEERING

May 2017 | Jaipur, India
GPA: 8.25/10

RELEVANT COURSES

GRADUATE

Synergy of Humans and Robot
Deep Reinforcement Learning
Foundations of Robotics

UNDERGRADUATE

Control System Engineering
Modern Control Theory & Design
Techniques
Computer Architecture and Organisation

INTERESTS

Reinforcement Learning | Control
Systems | Motion Planning
Manipulation |

SKILLS

LANGUAGES

Proficient:

C | Python | MATLAB

Familiar:

C++ | LATEX

SOFTWARES & PACKAGES

ROS (Indigo & Kinetic)
V-REP | SolidWorks
Arduino | Processing

LIBRARIES

TensorFlow | MoveIt
NumPy | Matplotlib

HARDWARE

Intel Galileo | Sensors | AVR
Atmega Micro-controllers

PROJECT WORK

MOTION PLANNING FOR 15 DOF SDA10F DUAL-ARM ROBOT

August 2017 - Ongoing | CIBR Lab - WPI | Mentor: Prof. Zhi Jane Li, Prof. Jie Fu

- Motion planning for each 7 DOF arm by generating multiple point trajectory (Using OMPL library and implementing simulation in ROS using MoveIt)

COLLABORATIVE TASK PLANNING USING REINFORCEMENT LEARNING

August 2017 - Ongoing | WPI | Mentor: Prof. Carlos Morato

- Simulating mid-air robot-robot object transfer on V-REP using Deep RL

ROBOTIC SYSTEM TO AID REHABILITATION OF STROKE PATIENTS

August - December 2017 | WPI | Mentor: Prof. Zhi Jane Li

- Implemented Dynamic Movement Primitives from motion capture data to derive trajectories with temporal and spatial scaling for 2 3-DOF manipulators

LOWER BODY WALKING BIPED ROBOT

August 2016 - April 2017 | ZINE LAB - MNIT JAIPUR | Mentor: Dr. Rajesh Kumar

- Cubic Spline Interpolation based trajectory planning for the foot, knee and hip motion for a in-house developed 12-DOF servo actuated biped robot
- IMU sensor based joint angle prediction and estimation of the biped's orientation (Sensor Data Fusion using Kalman Filter)

SMART ANIMATRONIC HUMAN FACE

Jan - May 2017 | MNIT JAIPUR | Mentor: Dr. Rajesh Kumar

- Implemented interactive control (using computer vision and speech inputs) on an in-house developed animatronic head

ROBOTIC SETUP FOR POWER TRANSMISSION LINE MAINTENANCE

March - April 2015 | ZINE LAB - MNIT JAIPUR | Mentor: Dr. Rajesh Kumar

- Hardware in the loop based simulation and live animation setup of the remotely functioning system

INTERNSHIP | SWAAYATT ROBOTS PVT. LTD

May-July 2016 | Bhopal, India | Mentor: Sanjeev Sharma (Founder)

- Developed a mobile robot with a 6-DOF serial robotic manipulator arm with the ability to learn through kinesthetic teaching
- Designed the mechanical setups and control system for automation of Accelerator, Clutch, Gear and Brakes of an existing SUV

PUBLICATIONS

- Kumar, Akshay, et al. "Hardware in the loop based simulation of a robotic system with real time control and animation of working mode.I" 2017 International Conference on Inventive Systems and Control (ICISC)". IEEE, 2017. URL

PATENTS

- Robotic Technology for Transmission Line Inspection in Live Condition - Patent Published URL
- Rail Alert Systems- Patent Published URL