VAIBHAV GUPTA

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OBJECTIVE

Seeking challenging research in Mechatronics incorporating skills in Mechanism Design, Control Theory and Machine Learning.

EDUCATION

Master of Science (M. Sc.) in Robotics | EPFL, Lausanne, Switzerland
SEPTEMBER 2019 – PRESENT

Bachelor of Technology (B. Tech.) | Indian Institute of Technology, Delhi, India
JULY 2013 – MAY 2017
Graduated with a GPA of 9.231/10 with major in 'Mechanical Engineering' and minor in 'Interdisciplinary Specialization in Robotics'. Main area of study was Mechatronics and Robotics along with Mechanical Design and Control Theory as special interests.

EXPERIENCE

Engineer | CBS Techno, Nagoya, Japan
SEPTEMBER 2017 – JULY 2019
Development of the logic for active control of suspension system using only the standard sensors available in a car at the client company (SHOWA Ltd.)

Intern | Robotics and Automation, TAL Manufacturing Solutions Ltd., Pune, India
MAY 2016 – JULY 2016
Worked on various projects on a 5-axis industrial arm

- Investigated and identified the source of positional error during Cartesian motion
- Programmed the front-end application for vision system being used for palletizing operation in C#
- Measured positional repeatability and interpreted the results to suggest possible improvements

RESEARCH & PUBLICATIONS

Three-stage computed-torque controller for trajectory tracking in non-holonomic wheeled mobile robot | 15th International Workshop on Advanced Motion Control (AMC) | March 2018 | Tokyo, Japan | DOI: 10.1109/AMC.2019.8371077

RoboAnalyzer: Robot Visualization Software for Robot Technicians | Advances in Robotics 2017 | July 2017 | New Delhi, India | DOI: 10.1145/3132446.3134890

Designing compact remote center of compliance devices for assembly robots | 2nd International and 17th National Conference on Machines and Mechanisms (iNaCoMM 2015) | December 2015 | Kanpur, India

OTHER ACADEMIC EXPERIENCE

- Teaching Assistant for the course 'Engineering Visualization and Communications MEP100'
- Robotics workshop for school children: Organized and conducted basic workshop on robotics for school students in Don Bosco School, Liluah, Kolkata under the guidance of Prof. S. K. Saha.

ACHIEVEMENTS

- IITD Semester Merit Award: Received the award for being in top 7% of the class
- Twelfth Board Topper: Overall board topper in class 12th in AMU board

Activities

Got experience to work in a large team with limited resources and received various technical insights through the activities of the Robotics Club of the institute.

Robotics

2014 Represented IIT Delhi in Polaroid competition held by IIT Bombay during TechFest 2014

- Built image processing robot to identify and reproduce a pattern using blocks in the arena with MATLAB
- Awarded IITD Alumni's Pearl Award for academic inter-college event

2015 - 2016 Member of team representing IIT Delhi in RoboCon, Robotic Competition

- Designed electrical systems and programmed the robot on Arduino and Raspberry Pi
- Awarded 'Best Innovative Design' and secured 7th position (2015)

2013 - 2015 Maintained RoboMuse, a full-time robot on display and standardized various components in the club

Projects

Force sensing in Laparoscopy Design | July 2016 – May 2017

Prof. Sudipto Mukherjee

Analysis, simulation and fabrication of a compliant mechanism using flexure components to sense and map the contact forces on laparoscopic instrument for haptic control.

Ball tracking mobile robot | September 2015 – November 2015

Prof. Kolin Paul

Implemented ball tracking using OpenCV and Python and communicated the information to the KUKA YouBot via ROS wrapper.

Computed Torque Controller for Wheeled Mobile Robot | January 2017 – May 2017

Prof. I. N. Kar

Formulated the dynamics for a general non-holonomic Wheel Mobile Robot and proposed a torque-based controller for stable tracking. Simulation and experiments showed acceptable behavior even on the introduction of random perturbations in the system.

Household Power Signature Analysis | Jan 2015 – April 2015

Prof. M. Balakrishnan

Aimed at recognition of switching events in the power supply.

- Implemented real-time analysis and recognition of electrical signature using machine learning algorithms
- Demonstrated in the event 'Open House 2015, IIT Delhi' to the public

Programming Skills

- MATLAB
- Python
- R
- Java
- C#/C++
- SolidWorks
- Creo
- ANSYS

Languages

Hindi	(Native language)
English	(Full professional proficiency)
Japanese	(Professional working proficiency)