Shail Jadav

Indian Institute of Technology Gandhinagar
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https://shailjadav.github.io/

Education

PhD Candidate in Mechanical Engineering   July-2018 to Dec-2023

Indian Institute of Technology Gandhinagar

Thesis: *"Human-Learning-Inspired Control for Robotic Manipulators"*

Adviser: Prof. Harish PM

Bachelors in Biomedical Engineering   July 2013- April 2017

Gujarat Technological University

Second rank in college and third rank in university

Professional Experience

Visiting Research Scholar   May 2023 -October 2023

Technical University of Vienna (TU Wien)

Project: *Shared Autonomy for Human Robot Interaction*

Adviser: Prof. Dongheui Lee & Prof. Christian Ott

Visiting Research Scholar   May 2019 -July 2019

The University of Texas at Austin

Project: *Development of ankle cuff for gait trainer robot*

Adviser: Prof. James Sulzer

Project associate   October 2017 -June 2018

Indian Institute of Technology Gandhinagar

Developed a device [PDEYE] to detect early onset of Parkinson's disease based on pupillary light reflex& conducted clinical study for the device

Adviser: Prof. Harish PM & Dr. Vruntang Kumar

Project assistant   July 2017-October 2017

Indian Institute of Technology Gandhinagar

Designed a device [PDEYE] to detect early onset of Parkinson's disease based on pupillary light reflex

Adviser: Prof. Harish PM & Dr. Vruntang Kumar

Summer Intern   June 2017-July 2017

Indian Institute of Technology Gandhinagar

Developed a remote control high-frequency vibration stimulation belt for rest tremor suppression in Parkinson's disease

Adviser: Prof. Harish PM & Dr. Vruntang Kumar

Biomedical Engineer   April 2017-June 2017
AIMS Hospital, Ahmedabad
Leader in the technical support during surgeries and implementation of the
new medical equipment.
Quality assurance and quality control of medical devices

Teaching Experience

Graduate Teaching Fellow [Mechatronics]   August 2022 – December 2023
Indian Institute of Technology Gandhinagar
Taught undergraduate course on mechatronics along with
Prof. Madhu Vadali

Graduate Teaching Fellow [Control Theory]   January 2022 – April 2022
Indian Institute of Technology Gandhinagar
Taught undergraduate course on control theory along with
Prof. Madhu Vadali

Teaching Assistant
ME LAB II: Enabled students to do "learning-by-doing"
Writing: Enabled students for scientific writing

Grants

Overseas Research Fellowship   May 2023 – October 2023
Indian Institute of Technology Gandhinagar
Shared Autonomy for Human Robot Interaction

NIDHI PRAYAS grant for product development   July 2022 - December 2023
Department of Science and Technology (Govt. Of India)
Development of analog adaptive motor driver for robots

Student Travel Grant | SPARC   May 2019 – July 2019
Department of Science and Technology (Govt. Of India)
Study of Locomotor Adaptation Using a Single
degree of freedom Bilateral Gait Trainer

Publications

[J1]	Sujay Kadam, Shail Jadav, Anadi Mehta and Harish PM	A Model-based Feedforward and Iterative Learning Controller Exhibiting Features of Human Motor Learning	IEEE Transactions on Cognitive and Developmental Systems (Conditionally Accepted with minor revision)

[J2]	Shail Jadav, Sujay Kadam, and Harish PM	Convergence Analysis and Experimental Validation of a Trial-by-trial Learning Controller with Features of Human Motor Learning for Robotic Manipulators	IEEE Transactions on Cybernetics (Under review)
[J3]	Shail Jadav and Harish PM	Configuration and Force-field Aware Variable Impedance Control with Faster Re-learning	Journal of Intelligent & Robotic Systems (In press)
[C1]	Shail Jadav, Shubhankar Riswadkar, Sujay Kadam, and Harish PM	Variable Impedance Learning Control with Faster Re-learning and Reduced Initial Errors in Re-perturbation for Robots Operating in Divergent Force Fields	ACM Advances In Robotics 2023
[C2]	Shail Jadav, Johannes Heidersberger, Christian Ott, and Dongheui Lee	Shared Autonomy via Variable Impedance Control and Virtual Potential Field for Encoding Human Demonstrations	IEEE International Conference on Robotics and Automation 2024 (Under review)
[J4]	Shail Jadav and Harish PM	Utilisation of Manipulator Redundancy for Torque Reduction During Force Interaction	ASME Letters in Dynamic Systems and Control (received minor revisions)
[C3]	Suyash Patidar, Shail Jadav, and Harish PM	Redundancy in Planar Robotic Manipulator: A Comparison of Redundancy Configurations for Force Production Tasks	IEEE Indian Control Conference 23
[J5]	Shail Jadav, Karthik Karvaje, Sujay Kadam, Vineet Vashista, James Sulzer, Ashish Deshpande, and Harish PM	Kinematic Analysis and Validation of a Customizable Single Degree-of-freedom Gait Trainer Device	ASME Journal of Medical Devices (received revision)
[J6]	Shah Vrutang, Shail Jadav, Sachin Goyal, and Harish PM	A Machine-Learning-Based Method to Detect Degradation of Motor Control Stability with Implications to Diagnosis of Presymptomatic Parkinson's Disease: A Simulation Study	MDPI Applied Sciences
[C4]	Shubhankar Riswadkar, Shail Jadav, and Harish PM	A Novel Approach for Combining Feedback and Feedforward Control in DC Motor Control: A Smooth Switching Strategy for Time-Varying Systems with Noisy Feedback	ACM Advances In Robotics 2023

Reviewer Service

IEEE Transaction on Robotics
IEEE International Conference on Robotics and Automation (ICRA)
ACM Advances in Robotics

Invited talks

[T1] March 2023	Advances in motion control and entrepreneurship	NIT Sikkim
[T2] March 2023	Advances in motion control	PDEU

Awards

[A1] 2023	Regional Finale of Boeing BUILD at IIT Gandhinagar
[A2] 2017	Runner-up at Google India Hackathon

Relevant Course Work

Human Robot Interaction	Digital Control Systems
Introduction to Robotics	Nonlinear Control
Modern Control Theory	Fundamentals of Neuroscience
Control Theory	Classics in Brain Science

Hobbies

Tinkering with Electronics & Embedded System | Musical Instruments | Cooking | Relaxing in Nature