DHYEY MIHIR SHAH

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EDUCATION

Navarachana International School	Vadodara, GJ
10th CBSE: 10/10 CGPA	*2016*
Anand Vidya Vihar	Vadodara, GJ
12th CBSE: 94%	*2018*
Pandit Deendayal Energy University	Gandhinagar, GJ
B.Tech Electrical Engineering: 9.03 CPI	*2018-2022*

WORK EXPERIENCE

Junior Research Fellow - Human Centered Robotics Lab Sept 2022 – Present

Indian Institute of Technology, Gandhinagar

- Research aimed at developing wearable systems to monitor, assess and assist human locomotion
- Creating control frameworks for adaptive interventions aimed at injury prevention & effective rehabilitation

R&D Graduate Assistant Trainee Jun 2022 - Aug 2022

Panda Water Technology

- Worked on designing and simulating test beds for industry sensors using Solidworks
- Analyzed and tested machine components for maintenance alongside a team

Embedded Systems Development Intern Jan 2022 - Apr 2022

Embisol Technologies

- Developed a dual mode HVAC Twin Fan Controller using the Mircochip Microcontroller
- Developed programmable logic controller(PLC) ladder programs & Designed PCBs for production

Robotics Industrial Training Intern Nov 2021 - Jan 2022

Vyorius Robotics

- Analyzed robotic manipulators to perform kinematic analysis using RoboAnalyzer software
- Presented work-space & task-space analysis reports, designed arm configurations to suit specific industry tasks

TECHNICAL PROJECTS

Integrated Sonomyography and Electromyography-based Control for WeARS | *IIT GN* Oct 2023 - Present

- Worked to continuously estimate muscle activation levels by combining surface electromyography(sEMG) and ultrasound echogenicity signals from lower-limb muscles. Programmed a control framework in LabVIEW for exoskeleton assistance based on predicted human volitional effort and conforming to a desired impedance model

Vision based Terrain Classification for a Cable-Driven Ankle Exoskeleton | *IIT GN* Sept 2023 - Present

- Developed a real-time gait classification system with Intel RealSense D435i camera by training a custom CNN using PyTorch and OpenCV, optimized for deployment on NVIDIA Jetson Nano. Designed a hybrid vision and user motion(using IMU) based high-level controller for cable driven exoskeleton to apply gait-adaptive force profiles

Musculoskeletal Modelling of Altered Gait using OpenSim | *IIT GN* Aug 2023 - Sept 2023

- Computed joint torques and muscle forces for the gastrocnemius and soleus muscles in altered gait patterns using the Vicon Motion Tracking System and Forceplates through modeling in OpenSim analyzing altering measures

PID Controller and Trajectory planning for 3RRR Robot | *IIT GN* Jul 2023 - Aug 2023

- Programmed a PID controller for custom trajectory generation and presenting kinematic analysis for a 3RRR serial robot manipulator using MATLAB, SimScape, and Robotics Toolkit

RehabPal: Virtual Rehabilitation and Balance Trainer using MediaPipe Jul 2023 - Aug 2023

- Developed a real-time virtual assistant enabling guided feedbacks and timed sessions for rehab and balance training through joint angle computations using Mediapipe for elderly and neurologically challenged patients

7 DOF Mobile Robot Simulation and Kinematic Analysis using ROS Jun 2023 - Jul 2023

- Modelled and simulated a 7 DOF mobile robot manipulator in Gazebo. Presenting its position and stiffness analysis, we computed and plotted its manipulability & taskspace stiffness ellipsoids(transational, angular) in MATLAB

RoboGleam: A Smart House Cleaning Robot   May 2022 - Jun 2022
- Programmed and designed a bluetooth-enabled automated floor cleaning robot using Arduino Mega. Working in multiple operation modes as an obstacle avoiding bot and tracing paths across the room as an economic prototype

Dual Mode HVAC Twin Fan Controller System | *Embisol Technologies*   Jan 2020 - Apr 2020
- Developed a dual mode Twin Fan controller as a redundant backup system using the PIC 16F1939 Microchip micro-controller and embedded C. Debugged PLC ladder programs, and designed custom PCBs using Altium

Chess Playing Robotic Arm | *PDEU*   March 2019 - Nov 2019
- Collaborated to design a chess playing robotic arm using Raspberry Pi 4B and Stockfish Engine in Python with a team of five. Designed manipulator links, custom chess pieces using AutoCAD, assembled manipulator hardware

RESEARCH CONTRIBUTIONS

"Machine Learning Driven-Wearable Sensor System for | *First Author*   Submitted for Review
Foot Landing Classification in Badminton"

"Biofeedback based Rehabilitation for Predictive Fall Prevention | *First Author*   Preparing Manuscript
in Elderly using Smart Shoe"

"Analyzing the Impact of Activity, Lying and Ruminating | *First Author*   On-going
Features for Accurate Calving Prediction in Indian Cattle"

EXTRA-CURRICULAR

Summer Partnership Intern | *BOLT Iot*   Apr 2020 - May 2020
- University Representative for marketing, delivered talks and practical workshop on IoT projects

Team Leader International Relations & Operations | *AIESEC in Ahmedabad*   Jan 2020 - Feb 2021
- Led team for leadership events at national conferences, maintained global partnerships for the committee

Core Committee Head | *Cretus - Robotics & Automation Club, PDEU*   Dec 2019 - Apr 2021
- Led design and automation projects using Arduino, Raspberry Pi, NordMCU; delivered technical workshops

Founder, CEO | *OriginalQuills, VALINQO*   Jun 2019 - Present
- Created a global community platform to promote and inspire writers; Technology driven digital marketing agency

Committee Member | *ESPA, TnP Cell (PDEU)*   Dec 2018 - Nov 2019
- Conducted talks, seminars on advances in electronics; managed university alumni relations and events

VOLUNTEERING WORK

Organizing Committee, Project: Namaste | *AIESEC in Ahmedabad*   Nov 2019 - Jan 2020
- Hosted incoming international volunteers, organized cultural events promoting Sustainable Development Goals

Summer Rural Volunteer | *Sneh Foundation*   June 2019 - Jul 2019
- Held food distribution campaigns in rural localities and recreational activities for underprivileged children

AWARDS & ACHIEVEMENTS

National Engineering Olympiad | *All-India-Rank 27*   2022
National Creativity and Aptitude Test | *1st Round Qualifier*   2022
Cognitive Robotics - NPTEL | *National Rank: 1*   2022
Best Session taken by a Team Leader Award | *AIESEC in Ahmedabad*   2021
Best Team Award | *AIESEC in Ahmedabad*   2020
Marathon Finisher for Consecutive years (EE Department) | *PDEU*   2020

SKILLS

Programming Languages: Python, C/C++, C#, SQL, Java, MATLAB, LabVIEW, HTML/CSS, VAL
Technical Skills: ROS, Gazebo, OpenSim, MuJoCo, OpenCap, Solidworks, AutoCAD, Unity, Computer-Vision, Machine Learning, Git, Proteus, Microchip xIDE, Vicon Nexus, AMTI NetForce, Biometrics Analysis Software
Libraries/Frameworks: Pytorch, TensorFlow, Keras, Sci-Kit Learn, Pandas, Numpy, Matplotlib, Seaborn, OpenCV
Non-Technical Skills: Microsoft Office, Adobe Photoshop, Adobe Illustrator, Wordpress, SEO, Social Media Marketing, Content Writing