Dhruv **Thanki**

Robotics Engineer

Newark, Delaware, USA

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Summary

Innovative and passionate Mechanical Engineer looking to gain the necessary education and training to begin a career as a Robotics Engineer so that I am at the vanguard of the forces driving new ideas and technologies in the field of robotics, specializing in the domains of dynamics and control of Under-actuated systems and legged locomotion in particular.

Work Experience

Space Application Center - Indian Space Research Organisation (ISRO)

Ahmedabad, India

Robotic Research Intern — *Jan. 2019 (6 months)*

- The major part of my research project was to formulate a tailored closed form solution to inverse kinematics for a 6-DOF Walk-and-Roll rover leg under the guidance of lead researchers Neeraj Mathur and Anurag Verma. (Department:MESA, Group:OPMG, Division: OMDD)

JMC Paper Tech Pvt. Ltd.

Ahmedabad, India

Mechanical Engineering Intern — *May. 2018 (2 months)*

- One of the measures proposed was modifying a CNC flame cutting machine which significantly reduced time in cutting sheet metal by devising a custom module for automatic nesting using SVGnest algorithm on a raspberry pi. **[Link]**

Projects

Simulation of a 5-Link Biped Robot

Newark, DE

2019

- The work done here is mostly same as that of 3-Link Biped, but as the biped here is made up of 5-Links there is a need to parametrize the feet trajectory using a curve; which here is a Bezier Curve, and also optimize it for minimal energy usage. **[Github]**

Simulation of a 3-Link Biped Robot

Newark, DE

2019

- A 3-Link Biped which uses forward leaning torso to drive the biped forward. Simulation uses hybrid zero dynamics controller and Feedback Linearization to generate a closed form solution. **[Github]**

The Waddler

Ahmedabad, India

2018-19

- A biologically inspired non-articulate robot that is able of generating a myopathic gait capable of waddling like a penguin using a reaction wheel to generate a gyroscopic couple which translates the robot forward. The policy is first optimised using a simulation. **[Link]**

Oxygen Generating System for under water breathing

Gandhinagar, India

2018

- A biomimicry project design closely based on the structure of the fish gills where counter-flow diffusion occurs due to the oxygen concentration gradient across a membrane hence the oxygen is provided directly to the blood. **(Published a Conceptual Research Paper)**

Other Projects Include:

Gujarat, India

2015/2017

- **Uncrashable Car:** A RC car that avoids collision with obstacles by over-writing user's input according to the data from ultrasonic sensors.
- **Self-Balancing Robot:** A workshop for building a robot capable of maintaining vertical position with the help of accelerometer and gyroscope sensors. **[Link]**
- **Hexa-Bot:** A workshop for programming and control of a HexaBot, an arduino based six-legged skeletal robot with configurable predefined motion.

Education

University of Delaware, Newark, DE, USA

Fall 2019 - Fall 2021

MS - Robotics

LDRP Institute of Technology and Research, Gandhinagar, India

July 2015 - Present

B.E. in Mechanical Engineering — *CPI till 7th Sem: 7.2/10*

Co-curricular Activity

AWL-Bot

Jodhpur, India

DRUSE - DRDO Robotics And Unmanned Systems Exposition (Competition) *April. 2018*

Qualified at preliminaries and went on to the West India Zone level where we created a prototype of AWL-Bot (Air, Water, Land) in which we integrated all three different modes of mobility, each for a different medium into a single unit. **(Provisional Patent Completed) [Link]**

Artificial Intelligence and Machine Learning

Ahmedabad, India

DSI, Govt. of Gujarat (Workshop) *2018*

A primer for supervised and unsupervised learning also gave a comprehensive introduction to neural networks and a deep look into the concept of back-propagation.

Skills

Programming and Mathematical Computing Softwares

Python (Intermediate) / C / C++ / Matlab

Modelling and Simulation Softwares

AutoCAD / Fusion360 / Webots / V-Rep / ROS [Intermediate]

Enthusiastic About

Electric Guitar / Street Photography / Physics And Astronomy

Other Exams

GRE: 165, 154, 3.5 (Q, V, AWA) / **IELTS:** 8.5, 8.5, 6.5, 6.5 (L, R, W, S); **Overall:** 7.5