

Dimple Bhuta

[Website](#) | [Email](#) | [LinkedIn](#) | [GitHub](#) | +917506084465

EDUCATION

Virginia Common Wealth University

Master of Science in Biomedical Engineering, (GPA:3.828/4.000, Top 10 % in class)

Richmond, VA, USA

Aug. 2009 – May 2012

K.J.Somaiya College of Eng/ Mumbai University

Bachelors of Engineering in Electronics

Mumbai, INDIA

Aug. 2005 – May 2009

WORK EXPERIENCE

Principal Engineer – State Estimation and Control

April 2024 – present

Senior Engineer – State Estimation and Control

June 2022 – March 2024

Technology Innovation Hub for IoT and IoE (TIH-IoT), IIT-Bombay

Mumbai, India

- Leading a team of engineers to develop, implement and test a sense and avoid solution for quadcopter's with the application of spraying in precision agriculture.
- Implemented odometry calculation for ground robot using encoders and orientation sensors.
- Implemented position estimation of a multi-rotor UAV using a depth camera
- Skills : Python, Robot operating system (ROS), Gazebo, Micropython

Senior research fellow

March 2019 - August 2021

Autonomous Robots and Multi-robot Systems Lab, IIT-Bombay

Mumbai, India

- Conceptualized and developed path planning, trajectory tracking algorithms for autonomous mobile vehicles to navigate predefined areas in the map
- Implemented static and dynamic obstacle avoidance
- Assisted in analyzing patrolling algorithm for secured patrolling of selected areas
- Implemented a code base to integrate developed algorithms using robot operating system (ROS) and webots simulator
- Skills : Python, Robot operating system (ROS), Webots Simulator, Matlab

Software Developer

July 2018 – January 2019

ASIGHT video analytics pvt ltd./AITOE Lab

Mumbai, India

- Worked with a team of engineers to develop vision-based surveillance systems deployed in ATMs
- Developed image processing algorithms and deep learning models for human detection and tracking in videos/live-stream
- Worked on logical and deep learning algorithms to tackle anomaly detection
- Skills : C++, OpenCV, Python, Tensorflow, PyTorch

Drone and Robotics Engineer

December 2017 – June 2018

Dhristi works

Mumbai, India

- Worked on developing motion planning algorithms for a manipulator (7 Degree of freedom) with an intended application of beach cleaning
- Implemented household object detection using Kinect camera and point clouds, motion planning to reach the goal object position and optimal grasp detection for house hold objects
- Skills : Python, ROS, Gazebo Simulator

Research assistant

March 2016 – March 2017

Singapore Institute of Neurotechnology, National University of Singapore

Singapore

- Designed slip control experimental setup with WidowX robot (under the guidance of post-doctoral fellow), to emulate human reflexes in case of slip conditions. Implemented Simulink model to read sensor data for a customized WidowX robot gripper, and control the gripper's position every 0.01 seconds.
- Developed a haptic glove and a graphical user interface, with an aim to render and replicate the sense of touch. Designed a first-generation interface between the tactile and the haptic glove to enable a user to feel the object gripped by the robot.
- Developed motion planning algorithms for the Universal Robots (UR10) to perform day-to-day tasks such as picking up the coin, bread cutting and opening the corkscrew for wine bottle.
- Skills : C++, Matlab, Simulink, Python, Altium Designer (PCB Design Software)

Project Assistant

August 2015 – December 2015

Multimodal Perception Laboratory, International Institute of Information Technology

Bangalore, India

- Compared algorithms for segmentation of jewelry in images.
- Implemented Grab cut algorithm with modifications to achieve segmentation task.
- Skills : C++, OpenCV

Assistant Professor

August 2014 – April 2015

Electronics and Communication Eng, Haryana College of Technology and Management

Haryana, India

- Taught courses on digital signal processing, and microprocessors and interfacing.
- Conducted labs on digital signal communication, and microprocessors and interfacing to facilitate student's grasping of topics taught in the course.

Project Manager - Embedded Software Engineer

September 2012 – April 2013

Infinite Biomedical Technologies

Baltimore, USA

- Conceptualized and engineered a pattern recognition based prosthetic arm which successfully classified hand-open, close, flex, extend, pronate, supinate and hook hand positions using subject's EMG signals. The aim of this project was to assist trans radial amputees to control their prosthesis.
- Implemented best practices with developers to streamline communication protocols between arm and remote GUI interface
- Skills : C++

RESEARCH EXPERIENCE

Brain controlled switch (MSc Biomedical Engineering thesis) | *Embedded systems* August 2010 – May 2012

- Developed a single channel stand-alone device which processes the EEG signals in real time and determines whether the user wishes to switch ON/OFF the lights of the room they are in

Design of cipher (BE Electronics Engineering thesis) | *VHDL, Cryptography* August 2008 – May 2009

- Designed a secured cryptographic system by combining DES algorithm and the 64-bit Fibonacci LFSR. Implemented this system using VHDL and tested it using FPGA kit.

TECHNICAL SKILLS

Languages: Python, C/C++

Frameworks: Robot operating system (ROS), Pytorch

Microcontrollers and developers kit: ARM, Arduino, Microchip PIC, Raspberry Pi, NVidia's jetson kits

Udacity Nanodegree: Computer vision, Deep learning

Others: Altium Design Summer, KiCad