# SAMYAM THAPA

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## Overview

PhD candidate in Computer Science at the University of Texas at Arlington, currently working on Hybrid metric-topological mapping, multi-scale spatial representation, and autonomous robot navigation in complex environments.

## Education

**University of Texas at Arlington** **GPA: 4.0**
PhD In Computer Science Current

**University of Texas at Arlington** **GPA: 3.8**
MS In Computer Science 05/2023

**National Institute of Technology Delhi**
B. Tech. In Computer Science and Engineering 06/2018

## Technical strengths

- **Languages** Python, Java, SQL, C
- **Python Libraries** Pandas, NumPy, Sklearn, Matplotlib, TensorFlow, Keras
- **Computer Graphics** Blender
- **Web** Groovy & Grails, Django, JavaScript, Jquery, HTML/CSS
- **SDLC/Documentation** Agile/Scrum
- **Platforms/ Frameworks** Windows, UNIX/Linux, Spring, Grails, Cura, Prusa3d
- **Cloud Platforms** Docker, Google Cloud Components, AWS

## Website/ Portfolio

**Personal website** https://tsoprano.github.io/

## Academic experience

**Graduate Teaching Assistant** 08/2023 to Current

**University of Texas at Arlington** – Arlington
- Machine Learning (CSE 6363), Fundamentals of Computer Vision (CSE 4310), Intermediate Programming (CSE 1320), Algorithms & Data Structures (CSE 3318), Autonomous robot design (CSE 4360), Intro to Unmanned Vehicle Systems (CSE 4378)
- Grading exams, projects and assignments for advanced courses. Conducting review sessions and meetings to assist students with course materials, exams and providing technical support and guidance.

## Industrial Experience

**Software Engineer** 01/2020 to 05/2021

**Deerwalk Inc.** – Lexington, MA | Kathmandu, Nepal
- Conducted data analytics and provided integrated informatics to derive actionable insights from raw healthcare data, enabling period-to-period comparisons and trend analysis.
- Developed reporting and search modules for U.S. healthcare data and implemented data exports using APIs such as MS Aspose Report.
- Designed and developed modules in Java/Groovy and AngularJS facilitating data integration from Web-Services (RESTful Services)
- Worked in Grails framework and User Interface implementation along with Front-End full-stack development of the application in JavaScript/jQuery. Data Visualization done using Highcharts and D3.js.

**Associate Software Engineer** 01/2019 to 01/2020

**Deerwalk Inc.** – Lexington, MA | Kathmandu, Nepal

- Conducted in-depth analysis of the existing codebase in **Java/Groovy**, identified and resolved critical bugs, and ensured all deliverables met quality standards and project deadlines.

**3-D Prosthetics manufacturing trainee** 06/2018 to 09/2018

**E- nable Nepal** – Kathmandu, Nepal

- Trained in 3-D printing and modeling, including setting up and operating 3-D printers (e.g., base plate leveling and material selection). Used Blender to modify and customize prosthetic designs to fit individual recipient measurements.
- Developed a recipient registration system to track personal information, measurements, and consent in a structured database.

## Selected Project Works

**Robot arm kinematics and dynamics in Unity, University of Texas at Arlington** **2024**
Generating random multicolored objects, detecting them using camera, and using robot arm simulation to sort and place them in their respective areas.

**Development of an Autonomous Rover Platform, University of Texas at Arlington** **2024**
Designed and implemented an autonomous rover platform. The mechanical design focused on modularity and maintainability, utilizing 3D-printed mounts. The rover's navigation capabilities included GPS-based waypoint navigation using ArduRover, and indoor navigation using dead reckoning with encoder data. The project also integrated an Extended Kalman Filter (EKF) with LiDAR data for improved localization accuracy. The technologies used included MATLAB/Simulink for GNC modeling, ROS for communication, a Pixhawk flight controller, GPS, LiDAR, and a Teensy microcontroller. The project culminated in successful autonomous navigation in both indoor and outdoor environments, demonstrating proficiency in robotics, sensor integration, and control systems.

**Head pose estimation, University of Texas at Arlington** **2022**
Developed a Mediapipe-based application to estimate the direction of the human face gaze on a camera.

**Django Blog web app, University of Texas at Arlington** **2022**
Created a blog style of an application, built on the Django framework, allowing users to write different posts, where each post belongs to a specific category/topic, and users can follow such categories. Users can comment, and up-vote/down-vote the posts and the comments on them. The app was deployed and hosted on Google App engine, using Cloud MySQL database and Cloud Storage for data persistence.

**Soccer match result prediction, University of Texas at Arlington** **2022**
Used Support Vector Machines (SVM) and XGBoost to predict English Premier League match outcomes based on historical data from 2005 to present.

**Nepalese vehicle number plate recognition system, University of Texas at Arlington** **2021**
Developed a vehicle number plate recognition system using lighting-controlled video/images of various types of automotives of Nepal and eventually categorizing them into odd and even number plates. Each task of plate localization, character segmentation, and numeral recognition used various image processing algorithms as well as neural network-based models as provided by different python and TensorFlow libraries.

**Plan Analytics, US Healthcare Data Analytics, Deerwalk Inc.,** **Jan 2019 - May 2021**
A team project. Contributed to development of Report manager, a Reporting application designed for cross-application report exchange using Rest API and reports were generated in Microsoft Aspose. Built a drillable dashboard that helped client to get overall insight of application from one place, re-factored existing web services making it thread-safe and externalize configurations and designed a backend service for export isolated from front-end.

**Executive Analytics, US Healthcare Data Analytics, Deerwalk Inc.,** **Jan 2019 – May 2021**
Another team project. Built dynamic dashboards with personalized modules in AngularJS for providing customized, executive-level summaries of Plan Analytics data.