Sneh Acharya

(832) 404-9810 | acharyasneh007@gmail.com | linkedin.com/snehacharya | github.com/sneh-ach

Education

Bachelor of Science in **Computer Science** | The *University of Texas at Arlington* Expected May 2025

- UTA Academic Scholarship (All 4 years)
- Freshman Honor Roll (Fall 2021)

Relevant Coursework: Intermediate programming, Object-Oriented Programming, Algorithms and Data Structures, Computer Organization, Linear Algebra, Python for Data Science

Software Skills

Languages:	C/C++, C#, Java, JavaScript, Python, HTML, CSS, PLC, Visual Basic, PHP, MySQL, Dart, Flutter
Frameworks/Other:	Git, Netlify, Firebase, OpenCV, NumPy, PANDAS, Cypress, Selenium, Bootstrap, WordPress
Operating System:	macOS, Windows, Ubuntu
Certification:	Additive Manufacturing, Mechanical Design, Robotics, and Automation
Skills:	Microsoft Office, SolidWorks, AutoCAD, ROS, Unity, Adobe Photoshop, Adobe Premiere, Adobe Illustrator
Language:	Fluent in English, Hindi, and Nepali

Work Experience

HERACLEIA HUMAN-CENTERED COMPUTING LAB (UTA) (http://heracleia.uta.edu)

UNDERGRADUATE RESEARCHER *March 2022 – Present*

- Making a platform for data collecting using ROS and the Summit XL robot to collect and process sensor data for autonomous navigation
- Building virtual settings with the Unity game engine to simulate investigations involving human-robot interaction
- Working on Smartphone-Based IoT-Controller Framework for Assisting the Blind in Human-Robot Interaction
- Working with Human-Robot Interactive System using Hand Gestures and Smartphone-based IoT-Controller Framework.

MOONLIGHT SERVICE SOLUTIONS (https://www.moonlightsvc.com)

WEB DEVELOPER *June 2021 – Present*

- Conducted preliminary discussions with clients regarding the design and functionality of the website.
- Reviewed designs and features as presented by the team.
- Leads off testing of all websites.
- Evaluated the state of readiness of websites before turning over the project to the client.

Projects

- **DFW Shree Krishna Pranami Samaj Texas | Web Development | (https://dfwskpm.org)**

  - Created solutions for identified problems or bugs.
  - Developed and validated test routines to ensure the quality of the external and internal interface.
  - Executed assignments with the use of web applications, scripts, and programming languages such as HTML, CSS and JavaScript.
  - Prior to going online, tested websites and conducted user testing and troubleshooting.

- **Capital One – Budgeting App | Flutter Flow (UI Design), Flutter, Dart, and Google Firebase | HackUTD IX | https://github.com/sneh-ach/Capital-One-Budgeting-App**

  - Designed, implemented, and tested Flutter and Dart code using BLoC pattern for IOS, Android and Web.
  - Designed and created custom -form features including scrolling selectors and data entries.
  - Used Visual Studio Code and android studio as the primary IDE to develop, test and deploy the Android application and Dart as programming language.
  - Used GitHub to manage Git repositories and versioning control.

- **Towards a Teleoperated Multimodal Human Robot Interactive SLAM using Smartphone based IoT-Controller Framework | Research Paper | Heracleia Human-Centered Computing Lab (http://heracleia.uta.edu)**

  Through this system, humans are added in the loop to build SLAM map where they send commands through IoT-Controller Framework to add and change locations, creating a Human Robot Interactive (HRI) SLAM map on top of 2D SLAM map. The HRI SLAM can be used by robot to navigate to locations, when users issue navigation command. Preliminary experiments conducted in lab environment showed that the HRI SLAM can be built and updated, using user voice and text commands. Adding or changing a location in SLAM map took an average time of 9.7 seconds while the robotic system took an average time of 40.96 seconds to complete a navigation task using SLAM map with an average distance error of 10.4 cm.

- **Smartphone-Based IoT Framework for Assisting the Blind in Human-Robot Interaction | Research Paper | Heracleia Human-Centered Computing Lab (http://heracleia.uta.edu)**

  Smartphone-based IoT-controller framework is proposed to assist visually impaired users with effective interaction with robots in a human-robot interaction scenario. The user can access a smartphone application through speech, give commands for a pick and place task, and the robot performs the task based on the user's speech command. This preliminary work aims to implement the general controller framework and test the integration with the robotic system.

- **Indoors Traversability Estimation with Less Labels for Mobile Robots | Research Paper | Heracleia Human-Centered Computing Lab (http://heracleia.uta.edu)**

  This project aims to determine indoor traversability estimation using only RGB images through the prism of binary image classification. Our proposed method exploits the power of a pre- trained Vision Transformer (ViT) which we fine-tune on our own collected small dataset. Through experimentation, we show that the performance of our fine-tuning method achieves high levels of accuracy and generalization and outruns well-established state-of-the-art deep architecture for image classification such as ResNet.

- **Assessment of Cognitive Fatigue from Gait Cycle Analysis Robots | Research Paper | Heracleia Human-Centered Computing Lab (http://heracleia.uta.edu)**

  The proposed system in this paper takes two asynchronous videos of the gait of individuals to classify if they are cognitively fatigued or not. We leverage the pose estimation library OpenPose, to extract the body keypoints from the frames in the videos. To capture the spatial and temporal information of the gait cycle, a CNN-based model is used in the system to extract the embedded Features which are then used to classify the cognitive fatigue level of individuals. To train and test the model, a gait dataset is built from 21 participants by collecting walking data before and after inducing cognitive fatigue using clinically used games. The proposed model can classify cognitive fatigue from the gait data of an individual with an accuracy of 81

- **A Shared Control Teleoperation Framework for Mobile Robots in In-doors Environments Utilizing Control Barrier Functions in Virtual Reality | Research Paper | Heracleia Human-Centered Computing Lab (http://heracleia.uta.edu)**

  This paper describes a novel shared control teleoperation frame- work for mobile robots that utilizes Control Barrier Functions (CBFs) as filtering mechanism to prevent a human operator from making dangerous actions. The proposed framework demonstrates the potential to create a CBF controller that enables users with no prior knowledge of robotics to safely tele-navigate mobile robots with limited situational awareness. As formal methods, we utilize a hand-crafted CBF, which acts as a repulsive field to describe unsafe regions withing the robot's vicinity. The implementation of the application was deemed possible by creating a Virtual Reality (VR)simulation in the Unity Engine with the SUMMIT-XL STEEL mobile base as an experimental platform. Preliminary experimental results show the ability of the framework to enable safe teleoperation.