# Sirshapan (Sirsh) Mitra CS (CRCV Lab) PhD Student

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**Research Interests** — *3D Vision, Reasoning and Planning, Vision Language Models, Diffusion Models, Gaussian Splatting, Semi-Supervised Learning, Gait Recognition, Person ReID.*

## Skills

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|---|---|---|---|
| **Python** | Numpy, Pandas, Open-CV, Sklearn, DataViz | **C/C++** | DS Algo, OpenGL, STL |
| **General** | Git, Command Prompt, Slurm, Jupyter, Latex | **Deep Learning** | Pytorch, TensorFlow, CUDA, AWS, SQL |

## Publications

- *AAAI '25 (Accepted)* - Kumar, Akash, **Sirshapan Mitra**, and Yogesh Singh Rawat. "Stable Mean Teacher for Semi-supervised Video Action Detection."
- *ICCVW '25 (Accepted)* - Mitra, **Sirshapan**, and Yogesh Singh Rawat. "GaitCrafter: Diffusion Model for Biometric Preserving Gait Synthesis."
- *(Under Review)* - **Mitra, Sirshapan**, Akash Kumar, and Yogesh Singh Rawat. "GaitX: A simple and generic approach for gait recognition under limited labels."
- *(Under Review)* - **Mitra, Sirshapan**, Zengyan Wang, Yogesh S Rawat. "GSPro: Progressive Gaussian Splatting for Aerial to Ground View Synthesis."
- *(Under Review)* - Reeshoon Sayera, Akash Kumar, **Sirshapan Mitra**, Prudvi Kamtam, Yogesh S Rawat. "RobustGait: Robustness Analysis for Gait Recognition."
- *(Under Review)* - Zengyan Wang, **Sirshapan Mitra**, Hui Xian Grace Lim, Yogesh S Rawat. "Sky2Ground: A Benchmark for Localization and View Synthesis with Varying Altitude."
- *MS Thesis* - **Mitra, Sirshapan**. "Semi-Supervised Gait Recognition." (2024).
- *ICDCN '22* - Das, Suparnakanti, Trishita Dhara, **Sirshapan Mitra**, and Sudip Kumar Naskar. "Understanding the Robustness in Phoneme Production Mechanism in English and Bengali." In Proceedings of the 23rd International Conference on Distributed Computing and Networking, pp. 273-277. 2022.

## Major Research Projects

**Walk-through Rendering from Images of Varying Altitude (WRIVA) by IARPA**  **Aug 2024 – Present**
- Novel view synthesis using Gaussian splatting.

**Biometric Recognition and Identification at Altitude and Range (BRIAR) by IARPA**  **Sept 2022 – May 2024**
- Worked on the biometric project with large-scale data.
- Achieved 2nd position out of 7 teams.

## Experience

**University of Central Florida**  **Sep 2022 – May 2024**
*Research Assistant*  *CRCV Lab*

Project: Limited Label Gait Recognition
- Conducted in-depth research on gait models, vision transformers, and diffusion models.
- Benchmarked multiple gait datasets and models to evaluate their performance and applicability and robustness.

Project: Cross-View Gaussian Splatting
- Generating novel ground views using sparse aerial and ground views.
- Used Gaussian Splatting, Stable Diffusion with ControlNet and IP adapters to generate novel ground views.

Project: Human Action and Motion Generation using Diffusion Models
- Employed diffusion models to generate human gait data while preserving gait characteristics.
- Used synthetic models to improve the performance of gait recognition.

**Defense Research and Development Organization, India**  **Sep 2019 – Jan 2022**
*Research Intern*

Project: Understanding Robustness in Phoneme Production Mechanism
- Employed Hidden Markov Models and advanced deep learning models like wav2vec to analyze the robustness in phoneme production, utilizing the TIMIT dataset.

## Education

**PhD in Computer Science**, *2024-Present, University of Central Florida, Research Topic: Reasoning and Planning using AI Models*
**MS in Computer Science**, *2022-2024, University of Central Florida, Thesis: Semi-Supervised Gait Recognition, GPA: 3.93/4*
**Bachelor of Engineering**, *2017-2021, Jadavpur University, India, GPA: 8.35/10*