Swasti Shreya Mishra

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EDUCATION

- **International Institute Of Information Technology Bangalore** August 2017 - July 2022
  Integrated Master of Technology in Computer Science Engineering; Cumulative GPA: **3.75/4** *Bangalore, India*

EXPERIENCE

- **University of Amsterdam** June 2024 - Present
  Ph.D. Candidate *Amsterdam, Netherlands*
  - Pursuing Ph.D. at the Human Aligned Video AI (HAVA) lab under Prof. Pascal Mettes and Prof. Erwin Berkhout, focusing on "video AI for enhancing diagnostic training in dental education."
  - Developing a joint 2D-3D diffusion model to create novel views of teeth and generate the underlying radiodensities accurately.

- **Adobe Inc.** July 2022 - April 2024
  Research Associate *Bangalore, India*
  - Engaged in several projects involving controlled video generation, multimodal design understanding and scoring, graphic design layout generation and optimization, and customization of text-to-image generation models.

- **Awl Japan** January 2022 - April 2022
  Research Intern *Remote*
  - Generated synthetic dataset for human-object tracking using the video game - Grand Theft Auto V's mod.
  - Worked on adapting a state-of-the-art human-object tracking model for a client use case using a single-shot framework for joint detection and embedding learning.

- **University of Waterloo** August 2021 - October 2021
  Mitacs Globalink Research Intern *Remote*
  - Curated and post-processed street-view images dataset using Google Maps - Street View Static API.
  - Developed a deep learning framework for flood risk analysis, that utilizes the depth features to estimate the first-floor height in street-view images.

- **Adobe Inc.** May 2021 - August 2021
  Research Intern *Remote*
  - Worked on context-aware scene enrichment and enhancement to aid the designers in their ideation phase.
  - Extended the proposed frameworks to UI/UX designs domain by giving recommendations for parallelly enhancing UI sketches to a lo-fi prototype thereby allowing rapid iterations between the sketch domain and the prototyping domain.

- **TU Dresden** May 2020 - July 2020
  Research Intern *Remote*
  - Worked on machine learning and database integration (Neo4j) for network-based biological pathway enrichment analysis.
  - Implemented a text mining-based approach using word2vec embeddings and Latent Dirichlet Allocation (LDA2Vec) that searches for lipid signatures and biological pathways in the published literature.

- **Microsoft Corp.** June 2019 - July 2019
  Software Engineering Intern *Bangalore, India*
  - Automated the interview scheduling process for organizations by developing a web and mobile app for "Interview Scheduling" using React/React Native, Django frameworks and Azure Services.
  - Utilized Microsoft Graph APIs such as Outlook Calendar API and Teams API to personalize the app for users.

PUBLICATIONS

[1] Laetitia A Renier, Kumar Shubham, Rahil Satyanarayan Vijay, **Swasti Shreya Mishra**, Emmanuelle P Kleinlogel, Dinesh Babu Jayagopi, Marianne Schmid Mast **A deepfake-based study on facial expressiveness and social outcomes**. In *Scientific Reports, 14(1), 3642.* (2024). [link]

[2] Aishwarya Agarwal, Anuj Srivastava, Inderjeet Nair, **Swasti Shreya Mishra**, Vineeth Dorna, Sharmila Reddy Nangi, Balaji Vasan Srinivasan. **SketchBuddy: Context-Aware Sketch Enrichment and Enhancement**. In *ACM Multimedia Systems Conference* (ACM MMSys 2023). [link]

[3] **Swasti Shreya Mishra**, Kumar Shubham, and Dinesh Babu Jayagopi. **A Hybrid Rigid and Non-Rigid Motion Approximation for Generating Realistic Listening Behavior Videos**. In *Indian Conference on Computer Vision, Graphics and Image Processing* (ICVGIP 2022). [link]

[4] Prateksha Udhayanan, **Swasti S Mishra**, and Shrisha Rao. **Firm Dynamics and Employee Performance Management in Duopoly Markets**. In *Physica A: Statistical Mechanics and Its Applications* (583:126298, 2021). [link]

PATENTS

[1] **Swasti Mishra**, Kuldeep Kulkarni, Duygu Ceylan Aksit, Balaji Vasan Srinivasan. **Attention map correction for garment animation generation – Adobe**

[2] **Swasti Mishra**, Tripti Shukla, Srikrishna Karanam, Balaji Vasan Srinivasan. **User Content Conditioning in Graphic Design Layout Generation – Adobe**

KEY PROJECTS

- **Text-to-Video Generation** August 2023 - January 2024
  Adobe Research *Dr. Kuldeep Kulkarni, Dr. Duygu Ceylan*
  - Developed a method for text-to-video generation by leveraging text-to-image diffusion models (ControlNet, Stable Diffusion, Adobe Firefly).
  - Proposed an approach that outperforms current state-of-the-art methods by maintaining better temporal coherence and allows the synthesizing of novel videos based on text conditioning.

- **Controllable Conditioning in Graphic Design Layout Generation** July 2022 - December 2022
  Adobe Research *Dr. Srikrishna Karanam, Dr. Balaji Vasan Srinivasan*
  - Proposed a novel semantics-aware learning objective that disentangles a graphic design layout's features semantically concerning the input modalities during the learning process.
  - Learnt a mapping from the latent space of the Variational Auto-Encoder model to a conditional latent space that controls model outputs with various aspects such as visual content, textual content, category types, and their proportions on the layout canvas using the Maximum Mean Discrepancy (MMD) learning objective.

- **Listening Behavior Video Generation** Dec 2021 - Jun 2022
  International Institute of Information Technology Bangalore *Prof. Dr. Dinesh Babu Jayagopi*
  - Proposed a one-shot DeepFake generation model to transfer an actor's behavior onto a single facial image that can be used for psychological studies.
  - Analyzed the effects of listening behaviors on meta-perception and other-perception.
  - We propose a hybrid model that combines first-order and zero-order motion, improving the output quality and preventing distortion, especially in non-rigid body motions.

RELEVANT COURSES AND TOOLS

- **Artificial Intelligence and Machine Learning Courses:** Artificial Intelligence, Visual Recognition, Natural Language Processing, Multi-Agent Systems, Machine Learning, Mathematics for Machine Learning.
- **Computer Science Courses:** Data Visualization, Computer Graphics, Graph Theory, Software Production Engineering, Programming Languages, Operating Systems, Introduction to Automata Theory and Computability, Discrete Mathematics, Data Structures and Algorithms, Design and Analysis of Algorithms, Database Systems, Programming (Python, C, Java, C++), Software Engineering.
- **Tools and technologies:** Python (Pytorch, Numpy, Pandas, Scikit-learn, Scipy, Seaborn, Matplotlib), C/C++, JavaScript, Java, CypherQL, SQL, Jupyter, LaTeX, React/React Native, Git, Neo4j, HTML, CSS.

EXTRA-CURRICULARS AND ACHIEVEMENTS

- Awarded **Late Sri. N. Rama Rao Medal for All-Rounder of the Year**, International Institute Of Information Technology, Bangalore – 2022
- Awarded **Dean's Merit List**, International Institute Of Information Technology, Bangalore – 2017-2022
- Awarded **Adobe Women in Technology Scholarship**(1 among 6 scholars in India) – 2021
- Qualified for **ACM-ICPC** (Association for Computing Machinery - International Collegiate Programming Contest), India Regionals (Kharagpur and Amritapuri) – 2018
- Won **Google 'Build For India' Hackathon**, Google Bangalore, secured 1st position in the Android Track – 2018
- Founder member of **Dance Club** IIIT Bangalore, 2018-2022