Subhrajyoti **Dasgupta**

Vancouver, BC, Canada

+1 (579) 366-4295 | subhrajyotidg@gmail.com | subhrajyotidasgupta.github.io | subhrajyotidasgupta | subhrajyoti-dasgupta

Education

Université de Montréal / Mila - Quebec AI Institute — *Montréal, Canada*

MSc Computer Science - Specialization in Artificial Intelligence — *September 2022 - May 2024*

- CGPA 4.11/4.33; Program supervisor - Prof. Yoshua Bengio

Research

- AVTrustBench: Assessing and Enhancing Reliability and Robustness in Audio-Visual LLMs. *(under review)*[paper]
- Meerkat: Audio-Visual Large Language Model for Grounding in Space and Time. ***ECCV 2024***. [paper]
- AdVerb: Visually Guided Audio Dereverberation. ***ICCV 2023.*** [paper]
- UnShadowNet: Illumination Critic Guided Contrastive Learning For Shadow Removal. ***IEEE Access.*** [paper]
- AudViSum: Self-Supervised Deep Reinforcement Learning for diverse Audio-Visual Summary generation. ***BMVC 2021.*** [paper]
- Listen to the Pixels. ***ICIP 2021.*** [paper]
- CardioGAN: An Attention-based Generative Adversarial Network for Generation of Electrocardiograms. ***ICPR 2020.*** [paper]

Experience

Applied AI Researcher — *Vancouver, Canada*

Zepp Health — *June 2024 - Present*

- Created an **advanced GUI/Web agent** to automate **computer control** from scratch by taming LLMs (comparable and prior to Anthropic's Claude).
- Developed prototypes of 2 new product line-ups that has **multimodal capabilities** using LLM-RAG (demoed at **CES 2025**) [media coverage].
- Using Generative AI to enhance the reasoning of fitness tech impacting important tasks like understanding personal sleep, nutrition analysis, etc.
- Tools used : Pytorch, OpenAI API, HuggingFace, Python 3, Pandas, Numpy, WANDB, AWS, SLURM, Shellscripts, Multiprocessing.

Researcher — *Remote*

University of Maryland, College Park [Advisor - Prof. Dinesh Manocha] — *Feb 2023 - May 2024*

- Worked on **foundational models** for multimodal learning focusing primarily on Vision+Audio+Language (published in **ECCV '24, ICCV '23**).
- Led the design of a **3M+ instruction finetuning** dataset for **fine-grained visual understanding** of AVLLMs.
- Formulated the design of a novel algorithm and benchmark (∼700K samples) for better **compositional reasoning** of AVLLMs.
- Tools used : Pytorch, HuggingFace, Python 3, Pandas, Numpy, WANDB, Linux OS, SLURM, Shellscripts, Multiprocessing.

ML Research Intern — *Montréal, Canada*

BIOS Health Inc. [Advisor - Prof. Guillaume Lajoie, Prof. Blake Richards] — *May 2023 - May 2024*

- Worked to build algorithms for **closed-loop neuromodulation devices** that can lead to precise and personalized therapies for diseases.
- Specifically responsible for designing **decoding algorithms** to understand **compound action potentials(CAPs)** in neural signals.
- Explored different generative models to generate synthetic data and create algorithms for detection of CAPs.
- Tools used : Pytorch, Python 3, Pandas, Numpy, Scikit-learn, MLFlow, AWS, Linux OS.

Visiting Researcher — *Kolkata, India*

Indian Statistical Institute [Advisor - Prof. Ujjwal Bhattacharya] — *January 2020 - August 2022*

- Designed novel approaches for **audio-visual scene understanding** & summarization, and illumination estimation & correction for natural scenes.
- Developed projects involving **audio-visual co-segmentation** and privacy-preserving synthetic ECG signal generation.
- Explored **self-supervised learning**, generative models, attention mechanism and other advanced deep-algorithms.
- Collaborated with internal and also senior industry researchers which resulted in top-tier publications.
- Tools used : Tensorflow 2.0, Keras, Python 3, Librosa, Pandas, Numpy, WFDB, Scikit-learn, Linux OS.

Data Engineer — *Kolkata, India*

Tata Consultancy Services [Client - Amgen Inc.] — *September 2020 - August 2022*

- Selected as a *Digital candidate* for top rank in global programming contest 'Codevita' (among ∼ 60k participants).
- Designed pipelines for **large-scale(multi terabytes) data ingestion** and maintained existing ingestion pipelines.
- Subject Matter Expert (SME) on 'Logistic Service Provider(LSP)' ingestion pipeline.
- Innovated and implemented **CI/CD feature enhancements** reducing pipeline deployment time by 80%.
- Trained and mentored new associates about different running ingestion architectures, technical know-hows, etc.
- Tools used : Python 3, PySpark, Databricks, PostgreSQL, Pandas, Numpy, CI/CD, Gitlab, AWS, Airflow.

Skills & Courses

Languages/Frameworks/Tools	Python, Java, SQL, Tensorflow, Keras, Pytorch, OpenCV, Scikit-learn, Pandas, Numpy, PySpark, Git HuggingFace, Jupyter, MlFlow, WANDB, Databricks, SLURM, Flask, websockets, PyInstaller, Agile
Relevant Courses	Deep Learning, Machine Learning, Data Science, Probability and Statistics, Discrete Mathematics Applied Mathematics(Linear Algebra and Calculus), Algorithms and Data Structures