

Sanchayan Sarkar

sanchayansarkar@yahoo.com • (412)5265258 • Website: <https://sanchveda.github.io/Sanchayan-Sarkar/>
5604 Fifth Avenue, Apt B-301, Pittsburgh, PA 15232

Experience

Graduate Student Researcher, University of Pittsburgh, Pittsburgh, PA, USA. Aug 2018-Present
Research assistant in developing multimodal machine learning models and analyzing behavior in dyadic conversations.

Project: Multimodal Turn Taking in Dyadic Conversations

July 2020- Present

- Developed multimodal machine learning models (in Python, PyTorch) for learning turn-taking strategies (end-of-turns, silence duration) from audio-video-text sequences in dyadic interactions.
- Achieved statistically significant multimodal cues and proposed multimodal transformers to obtain higher performance.

Project: Automatic Emotion Recognition in Dyadic Conversations

May 2020- Present

- Developed context aware multimodal sequential and non-sequential neural models (LSTM, Conv-LSTM, Transformers) for predicting composite emotion constructs from audio-video-text sequences in dyads (using Python, PyTorch).

Project: Automatic Depression Detection in Mother-Child Dyads

Aug 2018- Apr 2020

- Developed jointly learned Siamese neural networks for predicting PHQ-9 scores of depressed mothers in from mother-child face to face conversations (using Python, PyTorch). • Achieved 3% F1-score improvement over non-siamese models.

Project Researcher, Indian Statistical Institute, Kolkata, West Bengal, India.

Nov 2015- Dec 2016

Research Intern working on developing mathematical and statistical models for human face recognition.

Project: Illumination Variation Problem on Human Face Recognition

- Created novel local illumination-invariant descriptor for face recognition beating accuracy of competitive methods by 6.7% on CMU-PIE, 5% on Yale B and 2% AR, CUHK dataset • Technologies: MATLAB. [\[Paper\]](#)

Project: Dimension Reduction and Noise Reduction for Face Recognition

- Used linear regression to stabilize lower entropy space for dimension reduction in face recognition.
- Achieved 3% improvement on FRAV-2D, FERET dataset over state-of-the art methods • Technologies: MATLAB [\[Details\]](#)

Skills & Interests

Programming Languages: Python, MATLAB, Java, C/C++, SQL, Javascript.

Tools: PyTorch, Keras, TensorFlow, scikit-learn, openCV, pandas, Caffe, git, Arduino IDE, Android SDK, Unity 3D

Research Interests: Deep Learning, Machine Learning, Natural Language Processing, Computer Vision, Data Analysis.

Education

Master of Science (MS), University of Pittsburgh, PA, USA Aug 2017- Present

- Computer Science with specialization and research experience in Machine Learning. | *CGPA: 3.55 / 4.0*
- *Courses:* Machine Learning, Deep Learning, Natural Language Processing, Computer Vision, Artificial Intelligence.

Master of Science, (MSc) University of Calcutta, India

Jul 2013- Jun 2015

- Computer and Information Science. | *First Class, 75 % (in top 5)*
- *Thesis:* Image Enhancement using Cuckoo-Search Optimization.

Bachelor of Science, (BSc), St. Xavier's College, Kolkata, India

Jul 2010- Jun 2013

- Computer Science (Honors). | *First Class, 76% (in top 10)*

Selected Academic Projects

Detecting Deep Fakes (11785 Deep Learning). Nov 2019- Dec 2019

- Developed Siamese Statistical Recurrent Neural Networks to detect deep-fake video sequence (using Python, Pytorch)
- Achieved 10% higher AUC-ROC over Statistical Recurrent Networks in FaceForensics++ dataset. [\[Details\]](#)

Detecting Pneumonia in Chest X-Ray Images: ML approaches (2750 ML)

Mar 2019 – Apr 2019

- Implemented Resnet-50, InceptionNet, CNN on Chest X-ray images (using Keras, Tensorflow) with a 3% increase in recall with Resnet-50 over InceptionNet. [\[Details\]](#)

Tiny Google – A parallel word search engine (2510 OS)

Nov 2018- Dec 2018

- Developed a distributed search engine, using multithreading, that searches and retrieves documents based on search words from multiple worker nodes. Project done using Python and Threading. [\[Details\]](#)

Direct Manipulation in Virtual Reality (2610 HCI).

Nov 2017- Dec 2017

- Used tracked movements from smartwatch to move objects in Virtual Reality (using Android SDK, Unity 3D).
- Set up a user study gauging the difficulty of moving an box to a sphere of varying length in the virtual environment. [\[Details\]](#)

Publications

- “*Learning Turn-Taking Strategies in Multimodal Dialogue*”, 2021. (under preparation).
- “*Local Centre of Mass Face For Face Recognition under varying Illumination*”, 2017. [\[Link\]](#)
- “*Challenges and Effects of Plastic Surgery on Face Recognition Performance: A review*”, 2016. [\[Link\]](#)