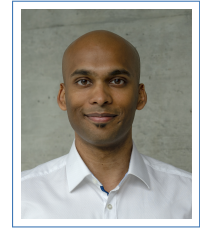


Eklavya Sarkar

Rue du Simplon 2B
1920 Martigny, CH
☎ +41 78 82 50 754
✉ eklavya.sarkar@idiap.ch
<https://eklavyafercb.github.io>
Nationality: Swiss



Research Interests

Deep Learning, Generative Models, Speech Processing

Work Experience

March 2021* **Research Assistant**, *Idiap*, Martigny, CH.

Supervisor: Dr. Mathew Magimai Doss, Senior Researcher, Speech and Audio Processing

- Topic: Inference of symbolic structure in speech and audio given minimal supervision.
- Affiliated to NCCR's 'Evolving Language' Technology Transversal Task Force (TTF).

2020 - 21 **Research Intern**, *Idiap*, Martigny, CH.

Supervisor: Dr. Sébastien Marcel, HOD Biometrics Security and Privacy

- Investigated vulnerabilities of modern facial recognition systems against morphing attacks.
- Implemented additional losses to StyleGAN2 to generate identity-conserving morphs.

Jun-Sep 2017 **Intern**, *CERN*, Geneva, CH.

Supervisor: Dr. Archana Sharma, Principal Scientist, CMS Experiment

- Improved data acquisition tools, and focused on radiation physics R&D experiments.
- Refined production code efficiency by implementing requested features on Python scripts.

Education

2021* **PhD Machine Learning**, *Ecole Polytechnique Fédérale de Lausanne*, CH.

2018 – 19 **MSc Data Science**, *University of Bath*, UK, Distinction.

2015 – 18 **BSc Computer Science**, *University of Liverpool*, UK, Distinction.

Manuscripts

2020 **E. Sarkar, P. Korshunov, L. Colbois and S. Marcel**, *Vulnerability Analysis of Face Morphing Attacks from Landmarks and Generative Adversarial Networks*, ArXiv.

Thesis

MSc **Optimising Facial Information Extraction and Processing using Deep Learning.**

Grade: Distinction

- Built end-to-end models to process different facial tasks from real-time images.
- Achieved 95% test accuracy on personal dataset with CNNs and hyper-parameter tuning.

BSc **Unsupervised Learning with Kohonen Self-Organizing Maps.**

Grade: 90%

- Implemented unsupervised neural network from scratch without using any ML library.

- Developed GUI for interactive data visualisation of clustering and dimensionality reduction.

TM **Exoplanets: Discoveries and Prospect.**

Grade: 6/6

- Conducted literature review with inputs from Didier Queloz, **Nobel Laureate in Physics**.
- Analysed data to show correlations between habitable planets and core laws of physics.
- Selected among top 2013 student projects in Geneva, and invited to present at CERN.

Academic Projects

NLP **Toxic Comment Classification.**

- Attempted to solve Kaggle competition with beyond *off-the-shelf* implementations.
- Compared approaches such as Log Regression, Trees, LSTMs with baseline Naive-Bayes.

RL **Flappy Bird Deep Q-Learning Network.**

- Trained model to play Flappy Bird using a DQN, and surpassed human level performance.
- Refined optimal policy with Experience Replay and Deep Deterministic Policy Gradients.

NLP **Open Information Relation Extraction.**

- Summarised body of text by training a ML speech tag classifier using Glove word vectors.
- Improved model by coding backtracking, Vertibi algorithm, Adam optimiser from scratch.

Leadership Experience

2017–18 **President**, *Dover Court Hall Students Society*, University of Liverpool.

- Elected President of Dover Court Halls by ballot vote majority to represent 270 students.
- Led 10 member committee by chairing weekly meetings and generating team vision.
- Enhanced residents' experience by managing events throughout the year.

Awards

Aug 2020 **International Create Challenge**, *3rd Prize*, AI-Hackathon.
Adversarial Attack Detection and Model Robustness

Talks

Nov 2020 Vulnerability Analysis of Face Morphing Attacks from Landmarks and GANs, *Idiap*.
Institute Presentation

Oct 2013 Exoplanets: Discoveries and prospects, *CERN*, Colloque Transfrontalier TPE-TM.
Invited Speaker

Programming Skills

Languages Python, Java, Javascript, PHP, SQL, C++, C#, HTML, CSS.
Frameworks PyTorch, TensorFlow, Keras, SkLearn, D3.js.
Misc. Git, Unix, Jupyter, Kaggle, Colab, xCode, Eclipse.

Languages

Fluent English, French, Hindi.
Intermediate German.