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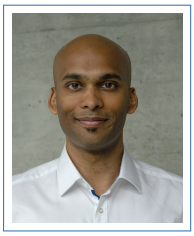
https://eklavyafcb.github.io



Research Interests

Deep Learning, Computer Vision, Generative Models

Work Experience

May 2020* **Research Intern**, *Idiap*, Martigny, CH.
Supervisor: Dr. Sébastien Marcel, HOD Biometrics Security and Privacy

- Implemented different ways to generate traditional and StyleGAN2-based face morphs.
- Investigated vulnerabilities of modern facial recognition systems against morphing attacks.
- Currently researching detection techniques for such attacks to publish paper by November.

Jun-Sep 2017 **Research Intern**, *CERN*, Geneva, CH.
Supervisor: Dr. Archana Sharma, Principal Scientist, CMS Experiment

- Improved data aquisition tools, and focused on radiation physics R&D experiments.
- Refined production code efficiency by implementing requested features on Python scripts.
- Completed pull requests on code for testing GEM detectors in quality control stands.

Education

2018 – 19 **MSc Data Science**, *University of Bath*, Bath, UK, *Distinction*.
2015 – 18 **BSc Computer Science**, *University of Liverpool*, Liverpool, UK, *Distinction*.
2009 – 13 **Maturité: Physics and Applied Mathematics**, *CEC André-Chavanne*, Geneva, CH.

Awards

Aug 2020 **International Create Challenge**, *9-Day Hackathon*, 3rd Prize.
Detection and Model Robustness against Adversarial Attacks.

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 input data.
- Achieved 95% test accuracy on personal dataset with CNNs and hyper-parameter tuning.
- Optimised performance and prevented overfitting with deep learning best practices.

BSc **Unsupervised Learning with Kohonen Self-Organizing Maps**.
Grade: 90%

- Implemented unsupervised neural network from scratch without using any ML library.
- Trained 3 models on different datasets to test neural network's efficiency and scalability.

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

Maturité **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 Geneva's top 8 student projects in 2013, 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.

Writing

Nov 2019 **Understanding Exoplanets with Data Science**, *Medium*.
4.3K Views

Oct 2019 **Kohonen Self-Organizing Maps**, *Medium*.
31K Views

Talks

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 TensorFlow, Keras, OpenCV, SkLearn, PyTorch, NumPy, Pandas, D3.js, Matplotlib, Flask.
Misc. Git, Unix, Jupyter, Kaggle, Colab, xCode, Eclipse, Mattermost.

Languages

Fluent English, French, Hindi.
Intermediate German.