Ayrton San Joaquin

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Education

Yale-NUS College *Singapore*

Bachelor of Science (Honors) in Data Science, Minor in Philosophy *August 2018 – May 2022*

Awarded Scholarship to attend Full-time

Coursera

Certificate in Machine Learning (Credential ID: WFK75DQC9N5Q) *July 2019*

Experience

Data Protection and Trustworthy Machine Learning Lab, NUS *Singapore*

Undergraduate Researcher *May 2021 - Present*

- Pitched and led a project to analyze Unlearnable Data as a data protection method. Paper to be refined in a workshop.
- Currently working on a membership inference attack for my bachelor's thesis and advised by Prof. Reza Shokri

NUS-Tsinghua Center For Extreme Search (NeXT++) *Singapore*

Deepfake Detection Research Intern *May 2020 – August 2020*

- Processed ∼200,000 images from FaceForensics++ Dataset and trained various detector models (Based on EfficientNet and Xception Net) using a High Performance Computing Cluster
- Read and adapted various robustness strategies against adversarial noises (e.g. Adversarial Training, Randomized Smoothing)

Arterys (Freelance) *San Francisco, United States*

Deep Learning Engineer (Volunteer) *March 2020 – June 2020*

- Created a COVID-19 Pneumonia classifier four days after pandemic declaration, and developed it on an IBM Power9 System provided by A.I. Singapore.
- Contacted by Arterys, and Deployed model in the Arterys platform, alongside models from NVIDIA and Ping An Technology, for use by American hospitals and researchers.

Skills

Programming Languages: Python, Java, R
Machine Learning in Python: Pytorch, Pytorch Lightning, NumPy, Sickit-Learn, Fastai
Data Management: Pandas, SQL, MS Excel
Application Deployment & Version Control: Docker, Google Cloud, Git, Singularity

Open-Source Projects & Contributions

Twitter Algorithmic Bias Challenge 2021

• Identified unintended sexualization of non-sexual images involving nudity by the Twitter Image Cropper Algorithm. Finished 9th out of 40 teams worldwide.

Explaining Neural Networks with Meaningful Perturbations *Pytorch, NumPy*

• Implemented the algorithm described in *Explanations of Black Boxes by Meaningful Perturbation (Fong, et. al., 2018)*, which perturbs a given image by masking the regions essential for an Image classifier to make a prediction.

COVID-19 Pneumonia Classifier for Diagnosis Triage *Fastai, Pytorch, Pandas, Docker*

• Trained a Resnet-34 Convolutional Neural Network (CNN) on ~ 26,000 images with Resampling to detect Pneumonia caused by COVID-19 on xray scans ultimately to triage patients for urgent diagnosis. AUROC for labels "covid", "opacity", "nofinding" were at 99.97%, 92.64%, and 92.73%, respectively.

Publications

February 2021 **Let's Keep Explainable Methods Practical and Relevant**, *Towards Data Science*

March 2020 **Using Deep Learning to Detect Pneumonia caused by COVID-19**, *Towards Data Science*

January 2020 **Three Things I learned from Creating Fake Faces Using A.I.**, *The Startup*