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

NeXT++ — *Singapore*

Deepfake Detection Research Intern — *May 2020 – August 2020*

- Preprocessed deepfakes from FaceForensics++ Dataset and trained various detector models (Based on EfficientNet and Xception Net)
- Adapted various robustness strategies against adversarial pertubations, including Randomized Smoothing and Fast Adversarial Training

Volunteering — *Singapore*

Deep Learning Engineer — *March 2020 – Present*

- Created a COVID-19 Pneumonia classifier four days after pandemic declaration, and developed it on an IBM Power9 System provided by A.I. Singapore.
- Deployed model in the Arterys platform($70M Medical Imaging Company, 6 FDA Clearances) for use by American hospitals and researchers. (https://marketplace.arterys.com/model/ayrtoncovidXR)

Computational & Systems Biology Research Cluster, Yale-NUS College — *Singapore*

Research Assistant — *September 2018 – May 2020*

- Packaged scobraPy to PyPI used by dozens of undergraduates every year.
- Routinely curate metabolic models by sifting through thousands of reactions and adding hundreds of missing reactions to produce essential biomasses.

Skills

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

Projects

Deepfake Detection — *Pytorch, Docker, Pandas*

• Explored the use of Saliency Maps (~ 150 000 images) to improve detection accuracy for images manipulated with the Neural Textures method and evaluated against different image compression types

https://github.com/ajsanjoaquin/deepfake_detection

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 and triage patients for urgent diagnosis.

https://github.com/ajsanjoaquin/COVID-19-Scanner

Pneumothorax Classifier — *Fastai, Pytorch, Pandas*

• Made a binary image classifier trained on a Resnet 50 CNN and ~11,000 x-ray images to detect Pneumothorax (collapsed lung) for the NUS-MIT Critical Care Datathon. Accuracy of ~87%.

https://github.com/ajsanjoaquin/Pneumothorax

Publications

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*

July 2019 — **Creating a Radiologist from Scratch**, *Towards Data Science*