Ayrton **San Joaquin**

⚗ SCIENTIST & SOFTWARE ENGINEER, TRUSTWORTHY AI | ✎WRITER

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Education

Yale-NUS College *Singapore*

BSc. (HONORS) IN DATA SCIENCE, MINOR IN PHILOSOPHY. (**SCHOLAR, WITH HIGH DISTINCTION**) *August 2018 - May 2023*

Semester Abroad at the University of Copenhagen, Denmark

Experience

French National Centre for Scientific Research (CNRS)@CREATE *Singapore*

AI SCIENTIST, DESCARTES PROGRAM (HTTPS://DESCARTES.CNRSATCREATE.CNRS.FR/) *September 2023 - Present*
- Leading a study on efficient training of Large Language Models for critical decision-making.
- Collaborating on a psychology study on human perceptions of intelligent systems in morally-relevant urban situations.
- Co-authoring an ethnographic study of AI researchers under the program to understand their assumptions in developing technologies for the smart city.

Machine Learning Safety Scholars Program, Center for AI Safety *Palo Alto, United States*

SCHOLAR *June 2022 - August 2022*
- Studied model failures (CV and NLP), and led research on analyzing Large Language Models (LLMs) using few-shot learning.
- Implemented various strategies in **robustness** (PGD, adversarial training), **anomaly detection** (AUROC, ViM), **calibration** (RSME, Brier scores), and **trojan attacks** (data poisoning).

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

UNDERGRADUATE RESEARCHER *May 2021 - March 2022*
- Collaborated with Google DeepMind on privacy and adversarial machine learning research for my bachelor's thesis in a team across 4 time zones. **Published in a top security conference (ACM CCS) as the youngest and only undergraduate co-author.**

Arterys (Freelance) *San Francisco, United States*

DEEP LEARNING ENGINEER *March 2020 - June 2020*
- Created a COVID-19 Pneumonia classifier **4 days after pandemic declaration in collaboration with A.I. Singapore**.
- Collaborated with Arterys to deploy the model in their platform for use by American hospitals and researchers. Model engineer in a team of 4 across 3 time zones.

Open-Source Projects & Public Service

The AI Summit Singapore 2024 *Public Communication*

• Invited as a featured speaker to dicuss about data privacy for Generative AI at Asia Tech x Singapore, co-hosted by the Singapore Government.

Public AI Advocacy *Field-Building*

• Co-authored the foundational document of a global network of AI researchers, policymakers, and practitioners to center AI research and development in the public interest and as public infrastructure.

Project Aria Timeline Builder Workshop 2023 *Contextual AI, AR*

• Invited by Meta Reality Labs to design a use-case for Project Aria. Participated as the only bachelor's graduate among 20 graduate and postdoctoral researchers. Video demo.

Explaining Neural Networks with Meaningful Perturbations *Explainable AI, CV*

• For explaining an image classifier's prediction, I implemented the algorithm described in *Explanations of Black Boxes by Meaningful Perturbation (Fong, et. al., 2018)*.

Open-Source AI *DevOps*

• Added new features for major machine learning projects including Pytorch, HuggingFace Transformers, and YOLOv4 (object detection model).

Publications

November 2022	Tramer, F., ..., **San Joaquin, A.,** et.al. , Truth Serum: Poisoning Machine Learning Models to Reveal Their Secrets	*ACM CCS 2022 link*
March 2020	**San Joaquin, A.**, *Using Deep Learning to Detect Pneumonia caused by COVID-19*	*Towards Data Science (Editor's Choice) link*

Skills

Machine Learning: Pytorch, Sickit-Learn, JAX, Keras, Tensorflow, Transformers, Langchain, NLTK, Spacy
Data: Pandas, Querying (SQL, MySQL, PySpark, MongoDB), Vector Database (Qdrant, Pinecone)
MLOps: AWS, AzureML, Snowflake, Docker, Flask, Continuous Integration, Kubernetes, MLFlow