Théophile Sautory

+1 (510) 502 52-09 | theophile.sautory@gmail.com | theosau.github.io | github.com/theosau

Education

University of California, Berkeley **May 2023**

MS in Mechanical Engineering, *GPA:3.93/4.00.*

Numerical Solutions of Differential Equations, Advanced Fluid Mechanics, Turbulence, Finite Element Method.

Imperial College London

MS in Computer Science, Artificial Intelligence & Machine Learning, *GPA:4.00/4.00.* **Sep. 2020**

Mathematics for Machine Learning, ML for Imaging, Deep Learning, Natural Language Processing.

BSc in Mechanical Engineering, *GPA:4.00/4.00.* **Jun. 2019**

Computational Fluid Dynamics, Computational Continuum Mechanics, Thermodynamics, Heat Transfer.

Work Experience

Arup **Aug. 2023 – current**

Machine Learning & Sustainability Engineer *San Francisco, CA*

- Developing ML models for simplifying facade drawings and predicting building energy consumption.
- Executing and automating wind, microclimate and datacenter analyses, using computational fluid dynamics.

Ansys **May. 2022 – Aug. 2022**

Machine Learning Research Intern, CTO Office *San Jose, CA*

- Designed autoencoders and training mechanisms for multi-objective optimization in physics-informed ML.
- Led the research on merging Ansys Fluent with deep learning for novel PDE solvers with the help of senior researchers.

UK National Crime Agency **Apr. 2021 – Jul. 2021**

Research Assistant, Artificial Intelligence *London, UK*

- Built data analysis and visualization programs with Python, and PyTorch including logistic regressions, PCA, siamese autoencoders, hypothesis testing, resulting in a 5x reduction in the number of cases to compare.
- Collaborated with Psychology Professors and crime analysts to consider human well-being and bias in the data.

Scortex **Sep. 2020 – Apr. 2021**

Deep Learning and Computer Vision Research Intern *Paris, France*

- Designed and tested various deep learning models on our hardware prototype to evaluate performance and latency.
- Improved the ROC-AUC performance in anomaly detection on images for the MVTec dataset by 5%, using generative modeling, TensorFlow, transfer learning and data augmentation.

Selected Projects

Reinforcement Learning from LLM Feedback to Counteract Goal Misgeneralization **Sep. 2023 – current**

- Trained a reward model with LLM feedback to enhance a maze-solving reinforcement learning (RL) agent.
- Reduced RL agent biases by integrating LLM feedback, contributing insights to the RL research community.

Super-resolution of PC-MRI blood flow images | *Forthcoming Publication* **May. 2022 – current**

- Combining deep learning with the Navier-Stokes equations to super-resolve PC-MRI blood flow images.
- Autoencoders compress the flow and geometry information to then condition a physics-informed neural network.

Google Waymo 2D Object Detection **Apr. 2020 – May 2020**

- Finetuned an EfficientDetd4 model on 700k-1080p images using GCP, NVIDIA Tesla V100 GPU, PyTorch and OpenCV.
- Implemented test time augmentation, mixed precision training and k-means clustering for anchor priors.

Technical Skills

Experienced: Python, PyTorch, TensorFlow, Keras, MATLAB, Linux, Git, LateX, Scikit-learn, Numpy, Pandas.
Familiar: C/C++ (CUDA/MPI/OpenMP), SQL, Julia.

Selected Publications

[1] Theophile Sautory, Nuri Cingillioglu, Alessandra Russo (2021): HySTER: A Hybrid Spatio-Temporal Event Reasoner, Thirty-Fifth AAAI Conference on Artificial Intelligence Workshop on Hybrid Artificial Intelligence.

[2] Alvaro Prat, Theophile Sautory & S. Navarro-Martinez (2020): A Priori Sub-grid Modelling Using Artificial Neural Networks, International Journal of Computational Fluid Dynamics, DOI: 10.1080/ 10618562.2020.1789116.

Extracurricular

Leadership: Vice-president of the Imperial College Basketball Society, and team captain, leading the 120 members to win Imperial Sports Club of the Year (2018-2019).
Hobbies: Basketball, Road biking, Reading, Poetry, Hiking.