Théophile Sautory

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Education

University of California, Berkeley **May 2023**

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

Computational Fluid Dynamics, Numerical Solution of Differential Equations, Finite Element Method.

Imperial College London

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

Thesis: Neuro-symbolic video question answering with spatio-temporal properties.

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

Embedded C for Microcontrollers, Mechatronics, Design Make and Test, Heat Transfer, Thermodynamics.

Work Experience

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 machine learning.
- 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 Researcher *Paris, France*

- 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.

L'Oréal Paris **Jul. 2017 – Aug. 2017**

Mechanical Engineering Intern *Paris, France*

- Implemented an eyelash classification algorithm to study personalized effects of applying mascara on eyelash health.
- Built a hand wheel machine to measure mascaras effect on eyelash volume and fall out for different eyelash classes.

Engineering Projects

Super-resolution of PC-MRI blood flow images | *Software development, health data analysis* **May. 2022 – current**

- Combining deep learning with the Navier-Stokes equations to super-resolve PC-MRI blood flow images.
- Building an associated web app using Python, Plotly and Dash, to enhance clinical practitioners' decision-making.

Google Waymo 2D Object Detection | *Computer Vision Engineer* **Apr. 2020 – May 2020**

- Designed 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.

Bionic hand for digital interface use | *Product Design Engineer, health data analysis* **Sep. 2018 – Jun. 2019**

- Designed and manufactured a bionic hand with motor control, using CAD (SolidWorks), 3D printing and Abaqus.
- Analyzed electromyogram signals from a below-elbow amputee to drive motor actuation and collect user feedback.

Technical Skills

Design: CAD (Solidworks), Prototyping (3D printing, machining), FEM / CFD (Abaqus, Fluent, Star-CCM+), Arduino.
Coding: *Experienced:* Python, Julia, MATLAB, Linux, Git, LateX. *Familiar:* C/C++ (CUDA/MPI/OpenMP), SQL.

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: Poetry, Hiking, Road biking, Tennis, Basketball.