Théo Galy-Fajou

Physics/Machine Learning

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Born 09.10.1992 in Castres, France

Education

2017 – current **Doctorate in Machine Learning**
Technische Universität Berlin
Supervision of Pr. Opper
See list of publications on the next page

2012 – 2015 **Master of Physics**
École Polytechnique Fédérale de Lausanne
Specialization in Particle Physics
Master thesis at the University of Edinburgh (UK)

2013 – 2014 **Minor in Computational Science and Engineering**
École Polytechnique Fédérale de Lausanne
Specialization in numerical analysis

2009 – 2012 **Bachelor of Physics**
École Polytechnique Fédérale de Lausanne
Third year spent at KTH (Stockholm, Sweden)

Work Experience

Dec 2017 - Apr 2022

Research Assistant at Technische Universität Berlin, Berlin
Research tasks on Bayesian Machine Learning. Teaching tasks for the Bachelor class "Basics and advances in Artificial Intelligence" and Master classes "Probabilistic and Bayesian Modelling", "Monte Carlo Methods", "Projects in Machine Learning", "Theoretical Understanding of Machine Learning". Supervision of Bachelor and Master thesis.

Aug 2016 - Sep 2017

Research Intern at Humboldt Universität zu Berlin, Berlin
Development of Bayesian SVMs

Developing a new Bayesian Model of SVM, both scalable and accurate, and augmenting it with multi-kernels, stochastic optimization and gaussian processes

Feb 2015 - Feb 2016

MRI Intern at Siemens Healthcare, Lausanne
C++ Sequence Development in MRI

Introduced a navigator controlling the motion of the patient with real-time feedback and synchronisation on a widely used MRI sequence. A second navigator was then introduced and processed to measure the motion and correct the coordinate system

Sep 2012 – Dec 2014

Teaching Assistant at EPFL, Lausanne and University of Edinburgh
General Physics
Guided groups of 1st, 2nd year, and master students from different faculties through tutoring sessions, covered a lot of fields from mechanics to electromagnetism as well as thermodynamics and particle physics

Jul 2012 – Sep 2012

Intern at Lancaster University, UK
Particle Physics
Treated data coming from a particle detector in Japan called ND280, part of the T2K neutrino experiment. Improved the reconstruction purity of the electronic neutrino without losing much reconstruction efficiency. Project in C++ and ROOT.

Strong Points:

- Proficient in software development
- Strong understanding of physics and statistical learning theory
- Communicate knowledge efficiently

Computer Skills

Advanced Knowledge	Julia, C++, Git, LaTeX, Matlab, Linux, Photoshop, Illustrator
Good Knowledge	Python, R, Excel, InDesign, Premiere, Word
Basic Knowledge	mySQL, PHP, JavaScript, HTML5, CSS

Projects

Sep 2014 - Feb 2015

Master thesis in particle physics
Development of reconstruction algorithm for $e^+e^- \to t\bar{t}$ and $e^+e^- \to \tilde{t}\bar{\tilde{t}}$ (SUSY) events in the new linear collider project CLIC at CERN through Bayesian techniques

Feb 2014 – Jun 2014

Project in Computational Science
Simulation of a perfectly matched layer in an electromagnetic case coded in Matlab and using the discontinuous Galerkin method. I artificially created open boundaries on an EM wave simulation.

Feb 2014 – Jun 2014

Research on Long-Lived Particle in the LHCb experiment
Using generated samples I analysed the characteristics of long-lived particles, determined methods to recognize them and finally apply these algorithms on real data from LHC experiment

Communication Skills

French	Native speaker
English	Fluent (C2)
German	Good knowledge (B2)
Spanish	Good knowledge (B2)

Miscellaneous

- Strong experience in graphic and web design (Graphic Designer and Communication Manager for different university associations) learned as an autodidact.
- Various summer jobs such as a packager in a organic products trading company and detasseler.
- Passionate by Dancing (swing, street dance and others), Theater, Graphic Design, Sports, Travelling and Bacon

Publications

Entropy Journal 21'

Flexible and Efficient Inference with Particles for the Variational Gaussian Approximation
T. Galy-Fajou, V. Perrone, M. Opper
Special edition on Approximate Bayesian Inference

AISTATS 20'

Automated Augmented Conjugate Inference for Non-conjugate Gaussian Process Models
T. Galy-Fajou, F. Wenzel, M. Opper

ICML 20'

Adaptive Inducing Points Selection for Gaussian Processes
T. Galy-Fajou, M. Opper
Accepted at the Continual Learning workshop

UAI 19'

Multi-Class Gaussian Process Classification Made Conjugate: Efficient Inference via Data Augmentation
T. Galy-Fajou, F. Wenzel, C. Donner, M. Opper
Oral presentation

AAAI 19'

Efficient Gaussian Process Classification Using Polya-Gamma Data Augmentation
F. Wenzel, T. Galy-Fajou, C. Donner, M. Kloft, M. Opper

ECML 17'

Bayesian Nonlinear Support Vector Machines for Big Data
F. Wenzel, M. Deutsch, M. Kloft
Conference track paper with oral presentation