Pierre-Cyril Aubin-Frankowski

Civil servant at Corps des Ponts, Eaux et Forêts
PhD graduate in Applied Mathematics

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`https://pcaubin.github.io/`

Experience

2021 - **Post-doctoral researcher**, *INRIA SIERRA*, Paris.
Kernel methods for constrained optimization problems with A. Rudi

Education

2018 - 2021 **PhD in Applied Mathematics**, *MINES ParisTech*, Paris.
Machine learning and control theory at the CAS laboratory under the supervision of Prof. N. Petit
Estimation and Control under Constraints through Kernel Methods

2017 - 2018 **Master of Public Policy**, *AgroParisTech and ENPC*, Paris.
Banking and macroeconomics, Law, Environmental dialogue
Master focusing on sustainable development and transportation issues designed for the civil servants of Corps des IPEF

April 2018 - July 2018 **MPP internship**, *Research and Innovation Division, MTES.*
Theme : AI for the scientific and technical agencies of the ministry

2016 - 2017 **Master of Science (M2)**, *ENS Paris-Saclay*, Cachan.
Machine Learning and Big Data - Highest honors
Specialized in convex optimization and kernel methods
Master MVA (Mathematics-Vision-Learning)

Mars 2017- Aug. 2017 **MS internship**, *CBIO, Ecole des Mines.*
Theme : Gene regulation inference from single-cell RNA sequencing
Recovering dynamics from a time-labeled point cloud of experimental measurements under the supervision of Prof. J-P. Vert

2013 - 2016 **Master of Science**, *École polytechnique*, Palaiseau.
Major : Applied Mathematics
Minor : Quantum Physics and (Neuro)biology

Mars 2016 - July 2016 **Research internship**, *IfA, ETH Zurich.*
Theme : Modeling of cerebral autoregulation
Cyclical systems identification under the supervision of Prof. J. Lygeros

Oct 2013-April 2014 **Civic service**, *Association Tremplin.*
Full-time science teacher in senior high school in the outskirts of Paris

Skills

Programming Languages: Matlab, Python, C/C++, Java, OCaml

Languages: English - Proficient / Italian - Bilingual / Russian - Reading

Awards

- Best post-doc presentation at Lifting Inference with Kernel Embeddings (LIKE22) Bern, January 2022,

Teaching

- 2019/2020 and 2020/2021: Teaching assistant in optimization for 3rd year of undergraduate studies at MINES ParisTech

Reviewer duties

I reviewed for JMLR, AMOP, JCOMP (journals) ICML, AISTATS, NeurIPS, ECC, ACC and CDC (conferences).

Journal articles

All the documents (video, pdf and slides) are available at `https://pcaubin.github.io/`

[1] (Under review) PCAF and Alain Bensoussan, *Reproducing kernel Hilbert spaces and Kalman filter*, May 2022

[2] (Under review) PCAF and Stéphane Gaubert, *Tropical reproducing kernels and optimization*, February 2022

[3] (Under review) PCAF and Zoltán Szabó, *Handling Hard Affine Shape Constraints in RKHSs*, January 2021

[4] SIAM J. on Control and Optimization PCAF, *Linearly-constrained Linear Quadratic Regulator from the viewpoint of kernel methods*, February 2021

[5] Comptes Rendus. Mathématique PCAF, *Interpreting the dual Riccati equation through the LQ reproducing kernel*, January 2021

[6] Bioinformatics PCAF and Jean-Philippe Vert, *Gene regulation inference from single-cell RNA-seq data with linear differential equations and velocity inference*, June 2020

[7] Systems & Control Letters PCAF, *Lipschitz regularity of the minimum time function of differential inclusions with state constraints*, May 2020

Conference proceedings

[1] (Under review) PCAF, Anna Korba, Flavien Léger, *Mirror Descent with Relative Smoothness in Measure Spaces, with application to Sinkhorn and EM*, May 2022

[2] (Under review) PCAF and Alain Bensoussan, *Operator-valued Kernels and Control of Infinite dimensional Dynamic Systems*, February 2022,

[3] IFAC CAO PCAF, *Stability of solutions for controlled nonlinear systems under perturbation of state constraints*, July 2022

[4] ICML (long oral) Anna Korba, PCAF, Szymon Majewski and Pierre Ablin, *Kernel Stein Discrepancy Descent*, July 2021

[5] NeurIPS PCAF and Zoltán Szabó, *Hard Shape-Constrained Kernel Machines*, December 2020

[6] IFAC WC PCAF, Nicolas Petit and Zoltán Szabó, *Kernel Regression for Trajectory Reconstruction of Vehicles under Speed and Inter-Vehicular Distance Constraints*, July 2020

[7] ECC PCAF and Nicolas Petit, *Data-driven approximation of differential inclusions and application to detection of transportation modes*, May 2020