Arthur Marmin
Curriculum Vitae

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DOCTORAL RESEARCH

"Exact optimization of rational models and application to the improvement of chemical processes"

My research interest is in convex optimization and polynomial optimization and their application to signal processing.

- I have worked on the application of Lasserre's hierarchy on several signal processing problems where structures can be leveraged to alleviate the computational complexity.
- I have developed algorithms to solve large-scale SDP problems.
- I have studied the connection between polynomial optimization, tensor decomposition and the moment problem.

WORK EXPERIENCE

APRIL 2015 — APRIL 2017

Industrial Technology Research Institute, Taiwan
Research Enginerr

I worked at the System and Architecture Design department:

- I modelled the power consumption and performance of embedded GPU and wrote OpenGL and Vulkan benchmarks.
- I took part in the development of a collaborative software platform for SoC, EDA and IP designers to perform early power and performance analysis and validation. The software is based on SystemC/TLM hardware model and a modified version of Qemu to run Android.
- I implemented image rendering techniques on FPGA to reduce the motion-to-photon delay inside virtual reality devices.

JULY — SEPTEMBER 2012

TeamWork Vietnam, Vietnam
SAP administrator

I monitored, administrated and installed SAP systems for Swiss and French customers.

TEACHING EXPERIENCE

SPRING SEMESTER 2020

CentraleSupélec, France
Optimization (2nd year)

OCTOBER 2017 — JUNE 2020

CentraleSupélec, France
Reinforcement classes in mathematics

Topics: topology, measure theory, Lebesgue integral, probability, statistics, and partial differential equation.

FALL SEMESTER 2014

National Chiao Tung University, Taiwan
Embedded System Design (Graduate class)

EDUCATION

NOW — **Doctor of Philosophy**
Centre de Vision Numérique
Advisors: Jean-Christophe Pesquet, Marc Castella
OCT. 2017 — *Université Paris-Saclay, CentraleSupélec*

JAN. 2015 — **Master of Science**
Electrical Engineering and Computer Science
Advisor: Shiao-Li Tsao
Thesis: Design and Implementation of an Embedded GPU Simulator
SEP. 2013 — *National Chiao Tung University, Taiwan*

JAN. 2015 — **Engineer Diploma in Telecommunication**
SEP. 2011 — *Télécom SudParis*

COMPUTER SKILLS

PROGRAMMING	C++, Assembly Languages, Python, LISP
HARDWARE DESIGN	Verilog, VHDL, SystemC, TLM
API	OpenGL, OpenCL, Qt, mlpack, Linux kernel
SOFTWARE	Matlab, GloptiPoly, Tensorlab, Xilinx Vivado Design suite, Git, Doxygen, Emacs

LANGUAGE SKILLS

FRENCH	Mother tongue
ENGLISH	Fluent, working operational
MANDARIN	Good working knowledge Used in daily life and working environment
GERMAN	Good working knowledge

EXTRA INFORMATION

- I have reviewed articles for IEEE Transactions on Signal Processing.
- I was a visitor at Gdansk University of Technology under the supervision of Anna Jezierska in January 2020.

PUBLICATIONS

A. Marmin, C. H. Lai, H. L. Huang, J. M. Liu, and S. L. Tsao. Design and implementation of an embedded GPU simulator. In *Computer Graphic Workshop*, 2015

A. Marmin, C. H. Lai, H. Tago, H. L. Huang, and J. M. Lu. Architecture agnostic energy model for GPU-based design. In *Proc. Int. Symp. on VLSI Design, Automation and Test (VLSI-DAT)*, pages 1–4. IEEE, April 2016

A. Marmin, M. Castella, J.-C. Pesquet, and L. Duval. Signal reconstruction from sub-sampled and nonlinearly distorted observations. In *Proc. European Signal Processing Conference*, pages 1970–1974. IEEE, September 2018

M. Castella, J.-C. Pesquet, and A. Marmin. Rational optimization for nonlinear reconstruction with approximate ℓ_0 penalization. *IEEE Trans. Signal Process.*, 67(6):1407–1417, March 2019

A. Marmin, M. Castella, and J.-C. Pesquet. How to globally solve non-convex optimization problems involving an approximate ℓ_0 penalization. In *Proc. Int. Conf. Acoust. Speech Signal Process.*, pages 5601–5605. IEEE, May 2019

A. Marmin, M. Castella, and J.-C. Pesquet. Sparse signal reconstruction with a sign oracle. In *Proc. Signal Processing with Adaptive Sparse Structured Representations (SPARS) workshop*, July 2019

A. Marmin, M. Castella, and J.-C. Pesquet. Detecting the rank of a symmetric tensor. In *Proc. European Signal Processing Conference*, pages 1–5. IEEE, September 2019

A. Marmin, M. Castella, and J.-C. Pesquet. A moment-based approach for guaranteed tensor decomposition. In *Proc. Int. Conf. Acoust. Speech Signal Process.*, pages 3927–3931. IEEE, May 2020

A. Marmin, A. Jezierska, M. Castella, and J.-C. Pesquet. Global optimization for recovery of clipped signals corrupted with Poisson-Gaussian noise. *IEEE Signal Process. Lett.*, 27:970–974, May 2020

A. Marmin, M. Castella, and J.-C. Pesquet. Globally optimizing owing to tensor decomposition. In *Proc. European Signal Processing Conference*, IEEE, September 2020, to appear

A. Marmin, M. Castella, and J.-C. Pesquet. Robust reconstruction with nonconvex subset constraints: a polynomial optimization approach. In *IEEE Int. Workshop Mach. Learn. Signal Process.*. IEEE, September 2020, to appear