Arthur Marmin
Curriculum Vitae

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DOCTORAL RESEARCH

"Rational models optimized exactly for solving signal processing problems" [link]

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

FEBRUARY 2021 — NOW

Signals and Communication Team, IRIT, Toulouse
Post-doctoral Researcher

APRIL 2015 — APRIL 2017

Industrial Technology Research Institute, Taiwan
Research Engineer

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

TEACHING EXPERIENCE

SPRING SEMESTER 2020

CentraleSupélec, France
Optimization (2nd year)

OCTOBER 2017 — JUNE 2020

CentraleSupélec, France
Reinforcement classes in mathematics

FALL SEMESTER 2014

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

EDUCATION

DEC. 2020	**Doctor of Philosophy in Signal Processing**
	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

Journal articles

1. Arthur Marmin, Marc Castella, Jean-Christophe Pesquet, and Laurent Duval. Sparse signal reconstruction for nonlinear models via piecewise rational optimization. *Signal Process.*, 179:107835, February 2021. doi: 10.1016/j.sigpro.2020.107835.

2. Arthur Marmin, Anna Jezierska, Marc Castella, and Jean-Christophe Pesquet. Global Optimization for Recovery of Clipped Signals Corrupted With Poisson-Gaussian Noise. *IEEE Signal Process. Lett.*, 27:970–974, May 2020. doi: 10.1109/lsp.2020.2998699.

3. Marc Castella, Jean-Christophe Pesquet, and Arthur Marmin. Rational Optimization for Nonlinear Reconstruction with Approximate ℓ_0 Penalization. *IEEE Trans. Signal Process.*, 67(6):1407–1417, March 2019. doi: 10.1109/tsp.2018.2890065.

Conference articles

4. Elie Leroy, Arthur Marmin, Marc Castella, and Laurent Duval. Weight Identification Through Global Optimization in a New Hysteretic Neural Network Model. In *Proc. Int. Conf. Acoust. Speech Signal Process.* IEEE, June 2021. doi: 10.1109/icassp39728.2021.9413383.

5. Arthur Marmin, Marc Castella, and Jean-Christophe Pesquet. Globally Optimizing Owing to Tensor Decomposition. In *Proc. European Signal Processing Conference*, pages 990–994. IEEE, January 2021.

6. Arthur Marmin, Marc Castella, and Jean-Christophe Pesquet. Robust Reconstruction with Nonconvex Subset Constraints: A Polynomial Optimization Approach. In *IEEE Int. Workshop Mach. Learn. Signal Process.* IEEE, September 2020. doi: 10.1109/mlsp49062.2020.9231524.

7. Arthur Marmin, Marc Castella, and Jean-Christophe Pesquet. A Moment-Based Approach for Guaranteed Tensor Decomposition. In *Proc. Int. Conf. Acoust. Speech Signal Process.*, pages 3927–3931. IEEE, May 2020. doi: 10.1109/icassp40776.2020.9054186.

8. Arthur Marmin, Marc Castella, and Jean-Christophe Pesquet. Detecting the Rank of a Symmetric Tensor. In *Proc. European Signal Processing Conference*, pages 1–5. IEEE, September 2019. doi: 10.23919/eusipco.2019.8902781.

9. Arthur Marmin, Marc Castella, and Jean-Christophe Pesquet. Sparse Signal Reconstruction with a Sign Oracle. In *Proc. Signal Processing with Adaptive Sparse Structured Representations (SPARS) workshop*, July 2019.

10. Arthur Marmin, Marc Castella, and Jean-Christophe 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. doi: 10.1109/icassp.2019.8683692.

11. Arthur Marmin, Marc Castella, Jean-Christophe Pesquet, and Laurent Duval. Signal Reconstruction from Sub-sampled and Non-linearly Distorted Observations. In *Proc. European Signal Processing Conference*, pages 1970–1974. IEEE, September 2018. doi: 10.23919/eusipco.2018.8553174.

12. Arthur Marmin, Chun-Hung Lai, Haruyuki Tago, Hsun-Lun Huang, and Juin-Ming Lu. Architecture agnostic energy model for GPU-based design. In *2016 International Symposium on VLSI Design, Automation and Test (VLSI-DAT)*. IEEE, April 2016. doi: 10.1109/vlsi-dat.2016.7482557.