Loïc **Tetrel**

Montréal (QC), CANADA

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***Data science engineer** (M. A. Sc.) specialized in applied **medical imaging research**.*
*I define myself as a **curious** and **autonomous** person with ease in **communication**.*

Professional profile

fMRI, ultrasound, HPC/GPU/CPU, machine learning, statistics, open source, image/volume registration, 3D reconstruction and rendering, epipolar geometry, optical calibration, tracking, camera optics, computer science.

Education

ÉTS (École de technologie supérieure) Montréal (include McGill course) — *Montréal, CANADA*

M. A. Sc. in Electrical Engineering, graduated with honors, GPA : 4.1/4.3 — *Sept. 2014 - Aug. 2016*

Lyon INSA (National Institute of Applied Sciences of Lyon) — *Lyon, FRANCE*

M. Eng. in Electrical Engineering — *Sept. 2012 - Aug. 2016*

IUT (University Institutes of Technology) Lyon 1 — *Lyon, FRANCE*

Technical degree in Industrial Engineering and Maintenance, graduated with honors — *Sept. 2010 - Jun. 2012*

Skills

Low-level programming	Bash, C++11 (OpenCV, Ceres, Boost, Eigen), CUDA, Assembly
High-level programming	Python (numpy, tensorflow, jupyter), MATLAB (statistical and ml toolbox)
Softwares	Docker, git, Kubernetes, Visual Studio 2017, Binderhub, LaTeX, Blender, 3D slicer
Operating systems	Ubuntu 18.04, Windows 10
Languages	French (mother tongue), Polish (fluent), English (professional, TOEIC 925), Spanish (basics)

Work Experience

SIMEXP lab, CRIUGM - University of Montreal/McGill — *Montréal (QC), CANADA*

Data Scientist (*): Academic research — *Nov. 2018 - PRESENT*

- Deep learning methods for applied neuroimaging research
  - Brain-state annotation: CPU/GPU distributed training on HPC (Horovod, SLURM) and feature visualization (tensorflow).
  - fMRI preprocessing: 3D unsupervised registration via a derivable spatial transformer network (tensorflow).
- CONP-Neurolibre : open and interactive neuroscience notebooks on the cloud
  - Server admin for a kubernetes cluster (binderhub, openstack, Docker)
  - Reviewer for the neurolibre submissions and community support (github)
- Communication (oral presentations, workshop trainer), and open-source contributions (nilearn, Binderhub)
- Conferences attendance (MAIN 2018/2019, OHBM 2019/2020).

Dental Wings/Straumann Group, Digital Business Unit — *Montréal (QC), CANADA*

Software Developer (*): 3D solutions for digital dentistry. — *Dec. 2016 - Oct. 2018*

- Algorithms for optical calibration, 3D scanning/reconstruction, dental metrology, with state of the art technology.
  - Prototyping in Python (Numpy, plotly, jupyter notebooks)
  - Agile development in C++ (OpenCV, Ceres, Eigen, Boost)
  - Building and versioning (VS 2017, Git)
- Conception of a virtual scanner for hardware/software experimentation and validation.
- Camera (and other devices) hardware validation. CMOS and camera integration.
- Conferences attendance (CVPR 2018, Agile Tour 2017), open days for recruiting interns (Concordia, Polytechnique, McGill).

LATIS, ÉTS Montréal — *Montréal (QC), CANADA*

Research assistant (*) : Graph-based estimation of probe trajectory for sensorless freehand 3D US. — *Jan. 2015 - Nov. 2016*

- Calibration of optical and electromagnetic probes for freehand 3D US.
  - Development in C++ (PLUS, SVN, CMake)
- Image registration from echographic sequence using speckle-decorrelation. Trajectory estimation by a directed graph with uncertainty (gaussian process regression and Lie Algebra). `https://link.springer.com/chapter/10.1007/978-3-319-47157-0_25`
  - Programming in C/C++ (GSL, OpenCV, Boost, Eigen), compilation under GNU/Linux (make)
  - Quantitative (Friedman and Kolmogorov–Smirnov test) and qualitative analysis in MATLAB
- Poster presentation at Colloque REPARTI 2016. Accepted paper for MICCAI/MLMI 2016 conference.

(*) References available upon request.

Thales Group, Thales Air Systems *Limours, FRANCE*

Intern (*) : Fast initialization of cartesian track using FM band *Feb. 2014 - Aug. 2014*

- Track initialization in cartesian coordinates with range measurements, using a custom non-linear filter and statistical methods.
  Implementation on MATLAB.
- Validation on aircraft records.
  Validation on MATLAB (MEX function) and C++ (Eigen).

Relevant Projects

- Blog about computer science (jupyter notebooks, HTML, Markdown) `https://ltetrel.github.io/`.
- Home-made stream media server (jellyfin).
- Automatic tool to re-synchronize SRT subtitles from a movie (tensorflow, spleeter) `https://github.com/polak0v/ReSuber`.
- Design of an autonomous robot's detection system (C, Altium) for an international amateur robotics contest (Eurobot).

McGill, ÉTS Montréal *Montréal (QC), CANADA*

2014 - 2016

- Registration of MRI and CT images using Gaussian Process interpolation with uncertainty.
- GPGPU and GPU architecture introduction, Sobel filtering development using CUDA (NPP) on Nvidia GTX.
- Automatic classification and prediction models for early Parkinson disease. Features extracted from SPECT nuclear images of patient's brain.

Volunteer Experience

Hacking Health Montreal *Montréal (QC), CANADA*

Event volunteer *Oct. 2016 - Dec. 2016*

- Promote innovations between health and science. Helped the organization of HIP Ottawa 2016 in CHEO-OCTC.

Big Band ÉTS *Montréal (QC), CANADA*

Event coordinator and guitarist *Sept. 2015 - Aug. 2016*

YES (Young Employees Society) Thales *Limours, FRANCE*

Member *Feb. 2014 - Aug. 2014*

- Young professional events. Thales trainees forum day.

ClubElek (Lyon INSA) *Lyon, FRANCE*

Beginner team manager *Sept. 2012 - Jun. 2013*

- Coordinator assistant for InnoRobo Lyon 2013.

IUT Lyon 1 *Lyon, FRANCE*

Free tutoring in mathematics *Sep. 2010 - Jun. 2012*

Conferences & Awards

Jun, 2019	**OHBM 2019,** Neurolibre promotion.	*Rome, IT*
Dec, 2018	**MAIN 2018,** Courtois Neuromod project supporting.	*Montréal (QC), CANADA*
Jun, 2018	**CVPR 2018,** Attendance to promote computer vision research for Staumann.	*Salt Lake city (UT), USA*
Nov, 2017	**Agile Tour 2017,** Training for agile development.	*Montréal (QC), CANADA*
Mar, 2016	**Grant,** Bourse interne ÉTS : merit scholarship for graduate students (3.000 CAD).	*Montréal (QC), CANADA*
Oct, 2016	**MICCAI 2016,** Poster presentation of thesis work.	*Athens, GREECE*
May, 2015	**1st place,** 24h de l'innovation : Mobile app to teach science for children.	*Montréal (QC), CANADA*
Aug, 2014	**Grant,** Explora'sup : regional merit scholarship for undergraduate students (2.000 EUR).	*Lyon, FRANCE*
Mar, 2013	**InnoRobo 2013,** Volunteer work as an event coordinator.	*Lyon, FRANCE*
May, 2013	**Qualification phase,** Eurobot : international robotic contest with autonomous robots.	*La Ferté B., FRANCE*

Interests

Travels	Europe (France, Poland, England, Spain, Germany, Greece, Switzerland), USA (UT, FL, CA, NV, NY), Canada (QC, ON, BC), Asia (Thailand)
Hobbies	IT (video games, computer vision, blockchain), politics, reading books (fantasy, SF), playing music (rock, jazz)
Sports	Weight training, ski, salsa dance

(*) References available upon request.