

# Théo Lemaire

Engineer • Neuroscientist • Versatile Programmer

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## EXPERIENCE

### Ph.D. in Computational Neuroscience | TNE Lab, EPFL

📅 Apr 2016 - Present 📍 Campus Biotech, Geneva, CH  
Developing computational models to understand and optimize *Ultrasound Neuromodulation* at sub-cellular, cellular and anatomical scales.

### Ski & Snowboard Instructor | Ecole du Ski Français

📅 Jan 2013 - Present 📍 Monts Jura, FR  
Teaching private and collective lessons to skiers of all levels and ages. Managed a group of 15 racers for 4 years. State diploma training currently underway.

### Mathematics Teacher | Institution Jeanne d'Arc

📅 Nov 2015 - Dec 2015 📍 Gex, FR  
Managed 3 classes (ca. 75 students, ranging 10-15 years old).

### Software Engineer Intern | Zenith Technologies

📅 Apr 2013 - Aug 2013 📍 Cork, IRL  
Designed a C++ application to extract relevant data from a database and provide team leaders with a comprehensive overview of their project's evolution.

### Kinesiology Lab Intern | Geneva University Hospitals

📅 Aug 2012 - Jan 2013 📍 Geneva, CH  
Developed a MATLAB framework to analyze biomechanical data from clinical exams, used by lab members for daily reporting and scientific publications.

## ACADEMIC PROJECTS

### Master's thesis in Neuroprosthetics | TNE Lab, EPFL

Developed multiscale computational models to predict the performances of different types of stimulation electrodes implanted in a peripheral nerve.

### Project in Biorobotics | BIOROB Lab, EPFL

Developed the image processing pipeline and navigation strategy for a differential wheeled robot to complete a slalom course through rectangular gates.

### Project in Digital Humanities | DH Lab, EPFL

Developed a spatio-temporal epidemics model to study the propagation of the Plague in the city of Venice during Middle-Age. 🌐 [Venice Atlas](#)

## TECHNICAL SKILLS

### Python

Computing & analysis stack (*numpy - scipy - pandas - matplotlib*)  
• Machine learning (*scikit-learn*) • PDE systems & FEM models  
• Multi-threading/processing • Neural simulations in *NEURON*  
• *Jupyter notebooks* • Automation tasks • Interaction with APIs

### C++

Object-oriented programming • IO streams • XML-querying • GUIs • Multi-threading (*Boost*) • 3D graphics (*OpenGL*) • mathematical libraries (*FFTW, Eigen*)

### Matlab

Scientific computing • Machine learning • GUIs • SQL queries

### Front-end web

Responsive web pages (*Javascript - HTML - CSS - Bootstrap*) • Interactive visualizations (*D3JS - Plotly*) • Interactive UI components (*React.js - Dash*)

### MS Office

Word - Excel - Powerpoint • Automation with Python / VBA

📁 Git • 🎨 Illustrator • 📄 LaTeX • 🖥️ LabVIEW

## EDUCATION

### MSc in Bioengineering Minor in Neuroprosthetics EPF Lausanne

📅 Sept 2013 - Sept 2015 📍 Lausanne, CH  
GPA: 5.34 / 6.0

### BSc in Life Sciences & Technologies EPF Lausanne

📅 Sept 2009 - July 2012 📍 Lausanne, CH  
GPA: 4.92 / 6.0

### Scientific baccalaureate Lycée Int. Ferney Voltaire

📅 Sept 2006 - July 2009 📍 Ferney, FR  
GPA: 18.71 / 20.0

## COURSEWORK

### Graduate

Sensorimotor neuroprosthetics  
Flexible bioelectronics  
Image processing • Machine learning  
Dynamical systems • Biomechanics  
Gait analysis & modeling  
Computational motor control  
Bioinformatics • Systems biology  
Digital humanities

### Undergraduate

Analysis • Algebra • Physics  
Chemistry • Organic chemistry  
Cellular biology • Molecular biology  
Numerical analysis • Statistics  
Electronics • Signal processing  
Programming (C | C++ | Matlab)  
Development biology • Microbiology  
Physiology • Genetics • Genomics  
Fluid dynamics • Transport phenomena  
Biothermodynamics • Neuroscience

## LANGUAGES

French ●●●●●  
English ●●●●●  
German ●●●○○  
Russian ●○○○○

## HOBBIES

🔬 Science 🥋 Taekwondo ⚽ Football 📺 TV Shows  
🎿 Skiing 🏔️ Hiking 🚴 Cycling 🌍 Travels

## PUBLICATIONS

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- Théo Lemaire, Esra Neufeld, Niels Kuster, and Silvestro Micera. Understanding ultrasound neuromodulation using a computationally efficient and interpretable model of intramembrane cavitation. *Journal of Neural Engineering*, 2019 [🔗 Web app](#)