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-quering • 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

- 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*