PhD. Nicolas E. Fricker

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Eager to expand my skills and experience in Machine Learning, Kernel or Neuroscience engineering.

TECHNICAL SKILLS

Computer Science
- ML Models: LSTM | RNN | CNN | VAE | DCGAN | VAE-DCGAN | MLP
- ML Frameworks: Tensorflow | Keras | PyTorch
- Programming Languages: C, C++, Intel-NASAM, Python, Bash, Julia, Java, Swift, Objective-C, R, LaTex, HOC, NMODL
- Chemical Engineering Software: Discovery Studios, PyMol
- Bioinformatics Frameworks: NEURON, FLAIR
- Git, GDB, LLVM, Xcode, Matlab, IDA, XPP/XPPAUT, R-Studio, SQLite, Qt Framework, Microsoft Suites

Wet Laboratory
- Bacterial Cell Cultures Cloning | Transformation
- DNA Library Screening, Nanopore long-read RNAseq
- DNA | RNA | Protein Purification | Extraction | Production
- PCR | RT-PCR | RT-qPCR | Microarray
- ELISA, Northern | Eastern | Western | Southern blot
- General laboratory techniques, writing extensive and concise lab reports

Fluent Languages
- English, French

EDUCATION

PhD. Mathematical Modeling for Neuronal and Fungal Networks, Université Côte d'Azur, Valoris, AM, FR	01/2023 - 01/2026
MSc. Modeling for Neuronal and Cognitive Systems, Université Côte d'Azur, Sophia Antipolis, AM, FR	09/2020 - 08/2022
MSc. Mathematical Engineering, Université Côte d'Azur, Sophia Antipolis, AM, FR	09/2020 - 08/2022
BSc. Molecular, Cellular & Developmental (MCD) Neuroscience, University of California, Santa Cruz, CA, USA	09/2017 - 06/2019
ASc. Biological Sciences, Foothill College, Los Altos Hills, CA, USA	09/2014 - 06/2017

EXPERIENCE

Mathematical Modeling for Neural & Fungal Networks - LJAD, Valoris, AM, FR — 01/2023 - 01/2026
- Developed mathematical models to describe Neuronal and Fungal Networks.

Kernel Engineer (ML) Intern - Cerebras Systems Inc., Sunnyvale, CA, USA — 06/2022 - 08/2022
- Developed and optimized scalable machine learning kernels for the Cerebras Systems Wafer Scale Engine (850'000 cores).
- Identified and isolated bugs in a novel compiler.

Modeling Neuroscience Intern - Institute of Biophysics, National Research Council, Genova, LIG, IT — 03/2022 - 08/2022
- Converted a complex Biologically-grounded Synapse model of plasticity induction from Julia to the Neuron Framework.
- Modeled Amyloid Precursor Protein (APP) Dynamics.

MCD Neuroscience & Bioinformatics Intern - IPMC, Valbonne, AM, FR — 09/2021 - 02/2022
- Searched for the presence of non-coding RNA transcripts variants of Amyloid Precursor Protein in Alzheimer's Disease patients.
- Long read Nanopore sequenced non-coding RNA isolated from hippocampi of contextual fear conditioned (CFC) mice.
- Extracted, purificate and analysed RNA from AD post-mortem patients.
- Induced hippocampal memory formation using CFC in mice, followed by analysis the non-codeing RNA profiles.

Computational Neuroscience Intern - INRIA, Sophia Antipolis, AM, FR — 03/2021 - 05/2021
- Analysed a complex Biologically-grounded Synapse model of plasticity induction.
- Simplified complex stochastic processes, for 1.6x computational speed imporvement.
- Identifed model components with highest number of PDMP jumps using the CHV method.
- Derived the Fokker-Plank equation by computing the infinitesimal generator matrix for the AMPAr.
- Computed the invariant distribution to simplify the VGCC-T.

Simulation of Intraneuronal Calcium Dynamics, Sophia Antipolis, AM, FR — 011/2020 - 03/2021
- Designed and engineered a simulated MFPT Calcium-CaMKII interactions in a Neuron cell.
- Computated linear transformations and Browninan motion.
- Compared simulated and analytical computation.

Computer Science & Machine Learning, Mountain View, CA, USA — 06/2019 - 09/2020
- Developed ML models from scratch in C++ and Python: LSTM | RNN | CNN | VAE | DCGAN | VAE-DCGAN | MLP
- Implemented ML models with Frameworks: Tensorflow, Keras, PyTorch.
- Certificate of Completion: Algorithms and Data Structures in C++ (2020), Udemy
- Created a multithreaded iOS app to search Craigslist efficiently. Swift frontend using the SwiftUI framework, backend in C++ with an Objective-C bridge. 25x faster than Craigslist's iOS app CPlus.

Applied Biochemical & Hydromechanical Engineering, Mountain View, CA, USA — 06/2019 - 09/2020
- Engineered & constructed an aquaponic system with a novel mineralizing and denitrification symbiotic filter.
- Developed a C++ program to compute flow rates depending on system configuration, and model biochemical multi-buffer equilibriums.

ACHIEVEMENTS

- Published *PFM Balance* for iOS and MacOS a personal finance manager on the Apple App Store.
- American Powerlifting Association (APA) California State Deadlift record holder (2015 - 2016)