Ilya Prokin

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Russian national with French visa and work permit.

CORE PROFICIENCIES Computational Science and Theoretical Neuroscience.
COMPLEMENTARY EXPERTISE Physics, **Computer Science, Probability Theory, Statistics, and Machine Learning**.

EDUCATION

Ph.D. Computational Neuroscience 2013 Oct.-2016 Dec.
INRIA Rhône-Alpes Villeurbanne, France

M.Sc. Physics (GPA: 4.63/5) 2011-2013
Lobachevsky State University of Nizhny Novgorod (UNN) Nizhny Novgorod, Russian Federation

B.Sc. Physics (GPA: 4.1/5) 2007-2011
Lobachevsky State University of Nizhny Novgorod (UNN) Nizhny Novgorod, Russian Federation
Courses included: **Computational Methods**, Dynamical Systems, **Probability Theory**, Calculus, and **Linear Algebra**.

RESEARCH EXPERIENCE

Ph.D. Research 2013 Oct.-2016 Dec.
INRIA Rhône-Alpes Villeurbanne, France

- Developed a **Data-Driven Mathematical Model** which explained the dependence of synaptic learning on the activity of neurons and experimental conditions. See https://github.com/iprokin/Cx-Str-STDP.
- This work included: Numerical Integration of Differential Equations, **Stochastic Simulations**, **Parameter Optimization**, **Sensitivity Analysis** and collaboration with experimentalists.
- **Python for Data Analysis** (NumPy, SciPy, PANDAS, sklearn, and matplotlib) and **Numerical Optimization** (PyGMO); Numerical Integration in FORTRAN95 interfaced with Python using f2py (x100 faster than Python+SciPy+NumPy).
- 1 scientific publication (in *eLife*, one of **top 10** journals in Biology/Neuroscience), 2 submitted, 1 in preparation.

Research Internship 2013 July-Aug.
RIKEN Brain Science Institute Saitama, Japan

- 3-D reconstruction of neuronal spines from a stack of two-photon microscopy images in MATLAB.

Graduate Research 2011-2013
Institute of Applied Physics Nizhny Novgorod, Russian Federation

- Architected a method for **graph reconstruction** from the **time-series** data generated by graph's nodes.
- **Time-series correlation** and its **statistical significance** in **C++**; **data manipulation/visualization** in MATLAB.

Undergraduate Research 2009-2013
Lobachevsky State University of Nizhny Novgorod Nizhny Novgorod, Russian Federation

- Solved numerically Differential Equations based model of a Neural Network with a customized Runge-Kutta in **C++**.
- 2 international scientific publications describing the model of interacting neurons and an adaptive synapse.

INDEPENDENT PROJECTS

- **Bitcoin price predition & betting bot** for btc-e.com (**Python**/sklearn/selenium).
- Participated in Two Sigma **Financial Modeling** Challenge on https://www.kaggle.com.
- **Machine Learning** powered RSS reader, built with **Python** and **Naive Bayes** approach with web-UI (CSS/HTML/JavaScript/Python). https://github.com/MLdog/nayesdog.
- Prediction of San Francisco crimes using **Deep Learning** on **GPU** with Keras **Python** module.
- Py_XPPCALL: **Python** interface to XPPAUT. https://github.com/iprokin/Py_XPPCALL.
- PokerC, Poker Odds Calculator (in development, Haskell). https://github.com/iprokin/pokerc.
- Haskell parser of Kospi market data from UDP packets in pcap file. https://github.com/iprokin/pcapKospi200.
- Built a server on Raspberry Pi with Dynamic DNS, SSH, git, OpenVPN, TaskWarrior, and Syncthing.

SKILLS

- OS: GNU/Linux and OS X (3 years), FreeBSD (3 months), and Windows (14 years).
- Technologies: **Python** 2.7/3 (including SciPy, NumPy, PANDAS, and sklearn) (>25000 SLOC[1]), Fortran 90/95 (>3000 SLOC), bash/zsh (>2500 SLOC), **C/C++** (>15000 SLOC), MATLAB/Octave (>25000 SLOC), Haskell (>2000 SLOC), HTML, CSS, LaTeX; familiar with **SQL**, **InfluxQL**, and tools as XPPAUT, NEURON, NEST, and LabView.

LANGUAGES

- Russian (native), English (fluent), French (limited working proficiency).

AWARDS

- **INRIA PhD Fellowship**, INRIA, Oct. 2013 - Dec. 2016.
- **Best Graduate Research**, UNN, Apr. 2013.
- The Dynasty Foundation scholarship, Jan.-June 2013. One of 40 winners out of 149 applicants.
- **Research Achievements** scholarship, UNN, Jan.-Dec. 2012. Given to 12 out of about 250 students.
- **Best Talk award**, 16th Scientific Conference on Radiophysics, UNN, 15 May 2012. One winner of 14 presenters.

1. SLOC: Source Lines Of Code↩