Tomas Fiers

Education

Sep 2016 – Jan 2019 MSc (burgerlijk ingenieur), Biomedical Engineering – KU Leuven, Belgium

Electives in artificial intelligence & machine learning, advanced statistical methods for data-analysis, and neuroscience.

Master's thesis: Real-time detection of memory-related voltage patterns in the brain through spatiotemporal filtering

Supervisors: Alexander Bertrand (STADIUS center for dynamical systems, signal processing, and data analysis) and Fabian Kloosterman (Neuro-Electronics Research Flanders)

Sep 2012 - Jun 2017 BSc, Computer Science & Electrical Engineering - KU Leuven, Belgium

Won the team "problem-solving and design" competitions both in the first and the second year.

Scientific positions

Apr 2019 - Present Neuro-Electronics Research Flanders - Leuven, Belgium

Research engineer. Validate master thesis work using multiple animals and probe types; prepare publication as a journal paper.

Supervisors: idem as master's thesis

Jul 2017 - Sep 2017 Byteflies - Antwerp, Belgium

Signal processing intern. Validate signal quality of motion sensors (accelerometer, gyroscope, magnetometer) against golden standard (motion capture), for use in a medical device.

Supervisor: Benjamin Vandendriessche (PhD), Chief Medical Officer

Poster presentations

Oct 2018 Cell-NERF Symposium: Neurotechnologies – Leuven, Belgium

"Early detection of hippocampal sharp wave-ripples"

Dec 2017 **NERF Retreat** – Leuven, Belgium

"Real-time detection of sharp wave-ripples through spatial filtering"

Open source contributions

Oct 2018 - Present Neural data analysis pipeline (GitHub)

Apr 2018 Web interface to label neuroscience data (GitHub)

Dec 2017 Interactive, 3D visualization of the rat brain (GitHub)

Methods

Programming languages Python, MATLAB, Julia, C, JavaScript, LaTeX

Software engineering principles Code is ideally DRY, documented, readable like prose, and as simple as

possible.

Data analysis techniques Multivariate and generalized linear models, artificial neural networks

(e.g. gated RNN's), linear and non-linear dimensionality reduction (PCA, generalised eigenvalue decomposition, UMAP), linear and non-linear dynamical system analysis, linear filter design and analysis, Fourier and wavelet decompositions, Bayesian modelling, probabilistic graphical models, support vector machines, robust statistics, autoencoders, clustering, baseline ML methods (nearest neighbours, decision trees), data wrangling and visualisation, cluster computing and distributed

processing.

Professional work experience

Sep 2017 - Dec 2017 Fluves - Ghent, Belgium

Business development intern Preparation of business plan for joint venture

Jul 2016 - Sep 2016 DataCamp - Leuven, Belgium

Software engineering intern Design, development, and testing of a high-throughput

app usage data pipeline

Extracurricular & volunteering

2013 – 2017 Arenberg Symphony Orchestra – Leuven, Belgium

Treasurer, IT, Section leader, President

2010 - 2012 Sport Vlaanderen & VVW - Nieuwpoort, Heist, Hofstade (Belgium)

Sailing instructor