

LUCA HERR-TTI

HERRANZ CELOTTI

PhD student

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📍 Montreal, Qc

EXPERIENCE

PhD student in Machine Learning

Multi-sensory Dialogue

📅 April 2016 – expected September 2021 📍 Université de Sherbrooke, Canada

- Supervisor: Jean Rouat
- Subject: incremental and multimodal vocabulary acquisition for a simulated agent dialogue interaction with a human
- Funds from European CHIST-ERA, project **IGLU**
- Courses on "Advanced Signal Processing" and "Reinforcement Learning" taken, and on "Bio-inspired AI" given
- Assistant in the development of a MOOC on spiking networks for the course "GEI792 - bio-inspired AI": pseudo-gradients episode finished and working on a reservoir computing episode
- Talks given in international conferences, papers published, major training events attended
- **Helping Bachelor students** with a target detection network for drones, based on UNet and ResNet for the AUVSI competition in July 2020, tutoring on AI and reviewer for ViGIL NeurIPS Workshop in 2019 and 2021
- 1 learning trading bot and 1 start up cofounded with friends, registered in Quebec
- Written funds application to FRQNT (International internship program)
- Stay in Austria, Graz, at Wolfgang Maass lab to improve the performance of spiking networks and the power efficiency of deep learning
- Lead organizer for the NeurIPS Workshop **DLDE**

Internship in Computational Neuroscience

Uncertainty Propagation in Population Coding

📅 October 2014 – October 2015 📍 Université de Genève, Switzerland

- Supervisor: Alexandre Pouget
- How the probabilistic population coding hypothesis can explain the way the brain deals with uncertainty, by means of Bayesian inference, dynamic programming, drift diffusion models and information theory tools, such as Fisher information and differential correlations
- Lectures taken on "Introduction to cognitive and affective neuroscience" and "Biological modelling of neural networks" with Wulfram Gerstner

Master in Biophysics

Information Transfer between Neurons

📅 October 2012 – October 2013 📍 Universidad Autónoma de Madrid, Spain

- Supervisor: Nestor Parga
- final grade: 2nd best among 14 students, 87,8
- Grant "Ayudas para Inicio de Estudios en Programas de Posgrado de la UAM": the whole Master, a yearlong language course and a monthly wage
- Master Thesis on an Information Theory analysis of neural signals: "Information transfer during a perceptual decision task"

Erasmus Scholarship

Directed Networks for Citation Graphs

📅 October 2011 – October 2012 📍 Imperial College of London, United Kingdom

- Yearlong Project on Graphs: "A dimensional analysis on directed networks for citation graphs"
- Course on "Biophysics of neurons" taken

Undergraduate in Physics

Theoretical Physics

📅 October 2007 – October 2012 📍 Universidad Autónoma de Madrid, Spain

- Final grade: 9th best among 64 students, 81,7%
- Maths (Topology, Differential Geometry, Group Theory, Graphs) and Psychology lectures

MOST PROUD OF



Courage I had
moving to the cities where things are happening



Persistence & Loyalty
in finding opportunities to perfect my craft



Winning Competitions
a drone won against 400 people in machine learning

STRENGTHS

Hard-working

Persuasive

Motivator & Leader

Team Worker

Curiosity

Linux

Latex

GitHub

Python/Matlab

Reinforcement Learning

Deep Learning

Spiking Networks

TensorFlow/Pytorch

EEG/MNE

programming drones



LANGUAGES

English

Italian

Spanish

French

German

Chinese/Arabic/Persian



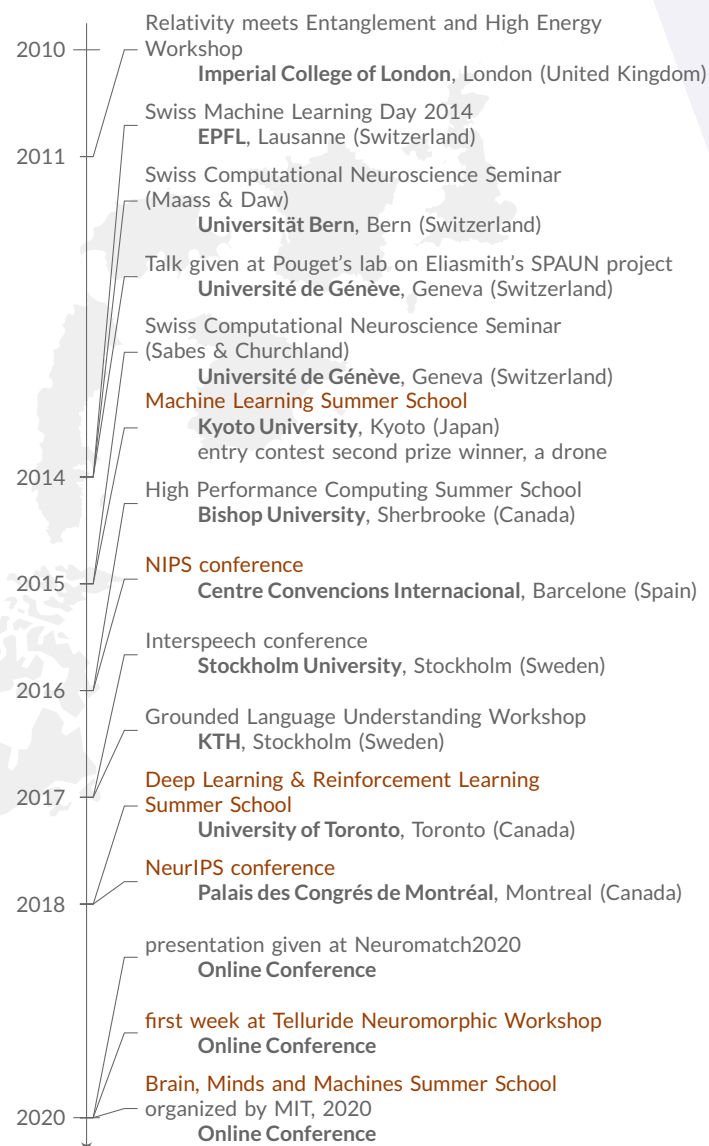
"Quality is not an act, it is a habit"

Aristotle

PUBLICATIONS

- Hosseini, M., Celotti, L., and Plourde, E. (2021). "Speaker-independent Brain Enhanced Speech denoising". In: ICASSP.
- Brodeur, S., Perez, E., Anand, A., Golemo, F., Celotti, L., Strub, F., Rouat, J., Larochelle, H., and Courville, A. (2018). "HoME: a Household Multimodal Environment". In: ICLR Workshop Paper.
- Celotti, L., Brodeur, S., and Rouat, J. (2018). "Language Coverage and Generalization in RNN-based Continuous Sentence Embeddings for Interacting Agents". In: Visually Grounded Interaction and Language (ViGIL) 2018, NeurIPS Workshop.
- Brodeur, Simon, Celotti, L., and Rouat, Jean (2017). "Proposal of a Generative Model of Event-based Representations for Grounded Language Understanding". In: Proc. GLU 2017 International Workshop on Grounding Language Understanding, pp. 68-72.

WORKSHOPS & SEMINARS



SKILLS

- Strong analytical and problem solving skills.
- Physics background means ordinary and stochastic differential equations, graphs, probabilities, signal processing, thermodynamics, electronics, general modelling and programming among others.
- Deep and spiking neural networks knowledge on subjects such as population coding, nonlinear dynamics and learning algorithms. Practical knowledge on feedforward and recurrent networks, GANs, Transformer based architectures, attractor dynamics, LSNN and techniques such as backpropagation, spike-time-dependent plasticity, holographic reduced representations, and pseudo gradients through non-differentiable layers.
- Statistics knowledge on subjects such as parametric and non-parametric Bayesian inference, Markov Decision Processes (MDP), and techniques such as expectation propagation.
- Machine Learning knowledge on convex optimization, Deep Neural Networks, Reinforcement Learning and techniques such as Random Forest Classifiers and Gradient Boosting Regressors.
- Interpersonal skills in different contexts such as Master students' delegate, team work, engaging people in presentations and how to interpret doubts to boost learning as a teacher.

OTHERS

- Passionate reader.
- Playing football (soccer), even if now I do it seldom, gives me the opportunity to be creative at understanding spaces and actions, peoples' rhythms at moving, their personal understanding of movement, their weaknesses and strengths, while working towards the team's common goals and keeping the team motivated.
- Exploration of different musical instruments like the violin, the guitar, the piano and the drums. I was also a drummer in a Samba band.
- I volunteered two summers with a CSIC researcher in Physics, on "Bohmian Trajectories".
- Hitchhiking 4 000km in a year means holding myself responsible and finding enjoyment in looking for creative solutions.
- Figuration in a Hollywood and in a Bollywood movie :)
- I like to elicit randomness, as a sparkle for creativity, look for the unexpected and learn from it.

REFEREES

Prof. Jean Rouat
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Prof. Ugo Bastolla
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