

# Pierre Hieu Guillemineot

Postdoctoral Researcher, [Intitut de Neuroscence des Systemes - INSERM](#)

Email: [pierre.guillemineot@inserm.fr](mailto:pierre.guillemineot@inserm.fr)

Personal website  
[phg17.github.io](http://phg17.github.io)

Google scholar  
[@Pierre Guillemineot](#)

GitHub  
[@phg17](#)

Twitter  
[@GuillemineotPierre](#)

## EDUCATION

---

2019 - 2023	<b>PhD in Neurotechnology - Computational Cognitive Neuroscience</b> Imperial College London, UK - Centre for Neurotechnology, <u>Thesis</u> : <i>Neural Mechanisms of Audio Tactile Speech Integration</i> <u>Skills</u> : <i>EEG Signal Processing, Spiking Neural Network, Statistics, Computational Modelling</i>
2018 - 2019	<b>MRes in Neurotechnology (Distinction)</b> Imperial College London, UK - Centre for Neurotechnology, <u>Thesis</u> : <i>Engineering Tactile Signals for Hearing Aids</i> <u>Skills</u> : <i>Speech Processing, Speech recognition, Biostatistics, Deep Learning, Cognitive Neuroscience</i>
2015 - 2018	<b>Msc in Bioengineering (Distinction)</b> Grenoble INP - Phelma, France - Department of Bioengineering <u>Thesis</u> : <i>A Robotic Supernumerary Thumb for Complex Musical Tasks</i> <u>Skills</u> : <i>Signal Processing, Robotics, Software Engineering</i>
2015 - 2016	<b>BEng in Engineering (Distinction)</b> Grenoble INP - Phelma, France - Department of Physics and Signal Processing <u>Main Courses</u> : <i>Maths, Signal Processing, Physics</i>
2012 - 2015	<b>Preparatory Classes for Grande Ecoles</b> Lycee Condorcet Paris, France <u>Major</u> : <i>Maths, Physics</i> <u>Minor</u> : <i>Computer Science</i>

## RESEARCH EXPERIENCE

---

2024 - now	<b>Postdoctoral Researcher - Computational Cognitive Neuroscience</b> Institute of System Neuroscience - Dynamics of Cognitive and Auditory Processes Team <u>Duties</u> : <i>Computational Modelling. Information Theory. Reservoir Networks. Machine Learning. Electrophysiology.</i>
2022 - 2023	<b>Data Scientist (part-time) - Neural Data Processing</b> INBRAIN Neuroelectronics - INNERVIA Bioelectronics - Data Intelligence <u>Duties</u> : <i>Neural Interface Characterization. Neural Data Analysis. Computational Modelling. Machine Learning.</i>

2022 - 2022

**Research Scientist Intern - Neural Interface**

INBRAIN Neuroelectronics - INNERVIA Bioelectronics - Data Intelligence

Duties: *Neural Interface Characterization. Software Engineering on a Neural Interfacing System. Neural Data Analysis. Computational Modelling.*

2017 - 2018

**Research Intern**

Imperial College London - Brain And Behaviour Lab

Duties: *Design and Control of a Robotic Supernumerary Finger.*

*Experimental Setup and Analysis of finger usage for Complex Musical Tasks.*

## SKILLS & AREAS OF EXPERTISE

---

**Quantitative background:** Broad training in engineering, applied mathematics and statistics with focus on biosignal processing, information theory, computational modelling and data analysis. Experience in developing and applying custom machine learning (scikit-learn), topological data analysis (giotto-tda) and deep learning (pytorch) frameworks.

**Programming and computational background:** Strong programming skills in Python. Demonstrable experience in high-performance computing, deep learning and general software engineering.

**Speech signal processing:** Speech processing with particular focus on offline/online feature extraction using signal processing and deep learning.

**Neuroscience tools:** Electrophysiological data (M/s/EEG) analysis and modelling. Nerve recording analysis and modelling. Machine learning, deep learning and spiking neural networks for biologically-constrained models (brian2). Multisensory Stimulation and Inertial Measurement Unit (IMU) for BCIs.

## PUBLICATIONS & PREPRINT

---

**P Guillemainot**, C Graef, E Butters, T Reichenbach (2023). Audiotactile stimulation can improve syllable discrimination through multisensory integration in the theta frequency band. *JOCN*

E Varano, **P Guillemainot**, T Reichenbach (2022). AVbook, a high-frame-rate corpus of narrative audio-visual speech for investigating multimodal speech perception. *JASA*

**P Guillemainot\***, M Kegler\*, E Varano\* (2021). sPyEEG: Package for modelling EEG responses to speech. (Zenodo)

**P Guillemainot**, T Reichenbach (2021). Enhancement of speech-in-noise comprehension through vibrotactile stimulation at the syllabic rate. *PNAS*

A Shafti, S Haar, R Mio, **P Guillemainot**, AA Faisal (2021). Playing the piano with a robotic third thumb: Assessing constraints of human augmentation. *Scientific Reports*

J Cunningham, A Hapsari, **P Guillemainot**, A Shafti, AA Faisal (2018) The Supernumerary Robotic 3rdThumb for Skilled Music Tasks. *Biorob 2020*

## MENTORING & RESEARCH SUPERVISION

---

**Laure Deyna**

PhD Student - Cognitive Neuroscience (2023-now)

Project: *Computational models of multi-scale Temporal Predictions in Speech Processing. Interaction between dorsal and ventral pathway.*

**Clement Sauvage**

PhD Student - Cognitive Neuroscience (2023-now)

Project: *Spectral Spatio-Temporal Decomposition of Entropy and Surprisal in the Electro-physiological response to Natural Speech.*

**Cosima Graef**

Msc Student - Bioengineering (2021-2022)

Project: *Characterizing the brain responses to multisensory stimuli by relating EEG and behavioural data.*

**Arianne de St-Victor**

Msc Student - Bioengineering (2020-2021)

Project: *Sensory substitution of hearing by touch using data from a robotic hand. Model of rigid contact body sounds.*

**Emilia Butters**

Msc Student - Translational Neuroscience (2019-2020)

Project: *Exploring the roles of neural oscillations in syllables parsing. Stochastic modelling of behavioural responses to speech.*

**TEACHING**

---

**Brain-Machine Interfaces**

Imperial College London, UK - Department of Bioengineering (2018-2022)

Teaching Award 2021

Description: *Supervise students during a machine learning competition. Teach neural data analysis and visualisation methods.*

**Reinforcement Learning**

Imperial College London, UK - Department of Computing (2021-2022)

Description: *Supervise students during practicals covering basic reinforcement learning (Bellman Equation, Markov Modelling) and deep reinforcement learning*

**Probability and Statistics**

Imperial College London, UK - Department of Bioengineering (2018-2022)

Description: *Teach the bases of probability and statistics*

**Modelling in Biology**

Imperial College London, UK - Department of Bioengineering (2019-2020)

Description: *Stochastic processes, differential equations and their applications to biology.*

**Maths II**

Imperial College London, UK - Department of Bioengineering (2019-2020)

Description: *Linear algebra and differential equations*

**VOLUNTEERING & PUBLIC ENGAGEMENT**

---

**Science Communication Workshops**

Imperial College London 2019-2021

Description: *Presenting neuroscience research to a general public.*

### **Bioeng Summer School Imperial College London**

Imperial College London, 2021

Description: Promote neuroscience to highschool students.

### **Girls who ML - Lecture Series Winter 2021**

Description: Volunteered to demonstrate workshops on machine learning and its application to different fields.

### **Co-organizer of the CDT Neurotechnology stand**

Imperial Science Festival 2019

Description: Presenting neuroscience research to a general public.

## **LANGUAGES**

---

**English:** Professional proficiency (IELTS C2 Level)

**French:** Native speaker

**German:** Elementary knowledge (A2)

**Spanish:** Elementary knowledge (A2)

## **HOBBIES**

---

**Art:** Drawing

**Game Theory:** Automating solutions to various games

**Musical Training:** Violin, Bass guitar