Pierre Hieu Guilleminot

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EDUCATION

10.2019 - 04.2023 (expected)	**PhD in Neurotechnology** Department of Bioengineering & Centre for Neurotechnology, Imperial College London, UK Thesis: *Neural Mechanisms of Audio Tactile Speech Integration*, supervised by Prof. Tobias Reichenbach, Prof. Etienne Burdet
10.2018 - 09.2019	**MRes in Neurotechnology** (*Distinction*) Department of Bioengineering & Centre for Neurotechnology, Imperial College London, UK Main Courses: *Statistics and Data Analysis, Neuroscience, Mathematical methods for bioengineering, Hearing and Speech Processing* Thesis: *Engineering Tactile Signals for Hearing Aids*, supervised by Prof. Tobias Reichenbach, Prof. Etienne Burdet
10.2015 - 09.2018	**Engineering Diploma** (*Distinction*) Department of Bioengineering - Medical Imaging Grenoble INP - Phelma, France Thesis: *A Robotic Supernumerary Thumb for Complex Musical Tasks*, supervised by Prof. Aldo Faisal
10.2015 - 02.2016	**BEng in Engineering** Department of Engineering Grenoble INP - Phelma, France Main Courses: *Physics, Electronics and Signal Processing*
10.2012 - 02.2015	**Preparatory Classes for Engineering Schools** MPSI - MP Lycee Condorcet Paris, France Main Courses: *Maths, Physics, Computer Science*

RESEARCH EXPERIENCE

10.2017 - 08.2018	**Research intern** Brain And Behaviour Lab, UK Duties: Design of a Robotic Supernumerary Controlled using Limb Substitution (C#, Arduino). Experimental Setup Design and Data Analysis Pipeline of the use of the finger for Complex Musical Tasks (Matlab, Optitracks). Supervised by Prof. Aldo Faisal.

05.2016 - 08.2016 **Undergraduate Research assistant**
Satoh Lab, Okayama University,
Duties: Animal Surgery, DNA sequencing and in situ Hybridization to study the Axolotl regeneration mechanisms. Supervised by Prof. Akira Satoh

SKILLS & AREAS OF EXPERTISE

Quantitative background: Broad training in engineering, applied mathematics and statistics with focus on biosignal processing, computation modelling and data analysis. Demonstrable experience in developing and applying custom machine learning frameworks (scikit-learn).

Programming and computational background: Demonstrable strong programming skills in Python and MATLAB, including many specialized packages/toolboxes/APIs. Basic programming skills in C/C# and Labview. Basic modelling skills in Comsol. Demonstrable experience in processing large volumes of data and high-performance computing.

Speech signal processing: Demonstrable experience in speech signal processing with particular focus on extracting speech features at an acoustic and phonetic level.

Neuroscience tools: Electroencephalography (EEG) Analysis and Modelling, Auditory Brainstem Responses (ABR), Multisensory Stimulation for Cognitive Experiments, Inertial Measurement Unit (IMU) for Human Machine Interface.

PUBLICATIONS

A Shafti, S Haar, R Mio, **P Guilleminot**, AA Faisal (2021). Playing the piano with a robotic third thumb: Assessing constraints of human augmentation. *bioRxiv*.
DOI: https://doi.org/10.1101/2020.05.21.108407

J Cunningham, A Hapsari, **P Guilleminot**, A Shafti, AA Faisal (2018) The Supernumerary Robotic 3rdThumb for Skilled Music Tasks. *Biorob 2020*, 665-670, DOI: 10.1109/BIOROB.2018.8487609

CURRENT WORK

COMMUNITY SERVICE, TEACHING & PUBLIC ENGAGEMENT (selected)

Research (co)supervision
Emilia Butters (MSc thesis, Imperial College London, 2019-2020)
Arianne Robert de Saint Victor (Mres thesis, Imperial College London, 2020-present)

Graduate teaching assistant
Department of Bioengineering
Imperial College London, UK
Courses:

- Statistics and Data Analysis (2018 - present)
- Brain-Machine Interfaces (2018 - present)
- Hearing and Speech Processing (2018 - present)
- Modelling in Biology (2019 - 2020)
- Maths II (2019 - 2020)

Co-organizer of the CDT Neurotechnology stand
Imperial Science Festival 2019
Description: Creating and Animating a stand using a music creation game based on EMG and EEG signals, as well as a rigged Speech Recognition based Rock Paper Scissors game.

Science Communication Workshop
Imperial College London, 2019 - present
Description: Learning and Preparing Oral Skills with the goal of making a public speech about science communication.

PROFESSIONAL AFFILIATIONS

2018 - present Association for Research in Otolaryngology (ARO), student member

LANGUAGES

English: Professional proficiency (IELTS C2 Level)
German: Elementary knowledge (A2)
Japanese: Elementary knowledge (A2)
French: Native speaker

REFERENCES

MRes & PhD supervisor: Prof. Tobias Reichenbach, Head of Sensory Neuroengineering group, Department for Artificial Intelligence in Biomedical Engineering (AIBE), Friedrich-Alexander-University (FAU) Erlangen-Nuremberg, Germany. Email: tobias.j.reichenbach@fau.de

PhD co-supervisor: Prof. Etienne Burdet, Professor of Human Robotics, Department of Bioengineering, Centre for Neurotechnology, Imperial College London, UK. Email: e.burdet@imperial.ac.uk

Research supervisor: Prof. Aldo Faisal, Professor of AI & Neuroscience, Department of Bioengineering, CDT AI of Healthcare, Imperial College London, UK. Email: a.faisal@imperial.ac.uk

Undergraduate Research supervisor: Dr Akira Satoh, Associate Professor of Regenerative Medecine, Okayama, Japan. Email: satoha@cc.okayama-u.ac.jp