

# Franklin Leong

Aspiring neuroscientist | Making virtual reality the reality

As an emerging neuroscientist, I am dedicated to making incremental changes in the world by applying my commitment and perseverance to research. My goal is to deepen our understanding of the brain to the extent that it enables creative applications to enhance human lives.

My journey so far includes several research internships that have equipped me well for my journey in a PhD program. These experiences in diverse laboratory settings have broadened my perspective on neuroscience, offering me various insights into the field.

With the rapid advancements in technology and the increasing availability of data, I am particularly excited about the potential of machine learning and artificial intelligence. These tools are pivotal in uncovering the complexities of the human brain and will be instrumental in my future research endeavors.

**Webpage:** <https://franklinleong.github.io/>

**Email:** [franklin.leong@epfl.ch](mailto:franklin.leong@epfl.ch)

## EDUCATION

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**École Polytechnique Fédérale de Lausanne** Lausanne, Switzerland  
Doctoral programme in Neuroscience 2021 to Present

- Enrolled in Life Science Engineering major
- Took part in research internship

**National University of Singapore** Singapore, Singapore  
*Bachelor of Science (Biomedical Science Specialization)* 2017 to 2021

- Minor in Artificial Intelligence
- Dean's List receiver
- Current cumulative GPA: 4.62/5.00

## SCHOLARSHIP

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### NUS-OGS scholarship recipient

- Under Singapore Teaching and Academic Research Talent Scheme (START).
- Only 2 awarded from NUS in year 2021.

### A\*STAR Undergraduate Scholarship

July 2018 - May 2021

- Awarded by the Agency for Science, Technology and Research, Singapore
- For individuals who display a passion for science and have achieved outstanding academic qualifications
- Required to undertake Ph.D degree after graduation



## TEACHING EXPERIENCE

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### Undergraduate teaching assistant

- Programming Methodology

### Graduate teaching assistant

- Neuroengineering of vision
- Neural signals and signals processing

## ACADEMIC AWARDS

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### Bachelor Dean's list for AY18/19 and AY20/21

- Awarded to top 5% of the total undergraduate Science students with meritorious performance.
- Required to read at least 19 credits worth of modules.

## CONFERENCE AND POSTER PRESENTATION

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**Leong, F., Rahmani, B., Psaltis, D. et al.** An actor-model framework for visual sensory encoding. *Nat Commun* 15, 808 (2024). <https://doi.org/10.1038/s41467-024-45105-5>

## LEADERSHIP POSITIONS

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### Committee member of interdisciplinary Special Program in Science

- Involve in planning multiple events for the community
- Engaging with the members of Special Program in Science

### Officer of the Singapore Armed Forces

- Manage, train, and lead a platoon of soldiers
- Involved in planning and execution of classified operations
- Experience with logistical planning for large-scale operations
- Awarded an advanced certificate in team leadership by Singapore Workforce Skills Qualifications

### Committee member of School of Chemical and Life Sciences academic society

- Involve in leading and planning multiple events for the faculty including large-scale events involving more than 100 participants
- Experience with handling large finances

## RESEARCH EXPERIENCE AND INTERNSHIP

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**PhD in Neuroscience, EPFL** September 2021 to Present

Sensory encoding for prosthetic device

- Under the supervision of Prof. Silvestro Micera and Dr. Solaiman Shokur
- Developing framework that will enhance the naturalness of sensory feedback
- Simultaneously encoding multiple haptics sensory feedback
- Concurrently redefining functional assessment for amputees

**Bachelor thesis at SINAPSE, NUS** June 2020 to April 2021

**Advisors: Yen Shih Cheng, Andrew Tan Yong Yi**

*Spiking models of working memory*

- Devise, code, and analyse spike neural network models of prefrontal cortex activity in a working memory task with distractors
- Utilized SPUD topological to analyse neural and simulated neural data
- Wrote a thesis of an estimated 15,000 words or a length of 100 pages

**Research Internship at EPFL/CHUV, Lausanne** January 2020 to October 2020

**Advisor: Eduardo Martin Moraud in collaboration with Grégoire Courtine and Jocelyne Bloch**

*Comprehensive machine learning approach to analyse Parkinsonian gait kinematics*

- Designed machine learning framework to classify and predict UPDRS score
- Identified subspaces that will be useful for clinicians to better evaluate the gait kinematics of Parkinsonian patients
- Eventually to create software for automated generation of gait kinematics report

**Research Internship at A\*STAR** May 2019 to August 2019

**Advisor: Rosa So**

*Spike identification with Hidden Markov Model*

- In fulfilment of the requirement for A\*STAR undergraduate scholarship
- Involved in data analysis and spike sorting
- Implemented Hidden Markov Model for spike sorting
- Provided a window to clinical-related research

**Research Internship at SINAPSE, NUS** May 2018 to December 2018

**Advisor: Yen Shih Cheng**

*Neuronal Code Morphing Observed during a Working Memory Task*

- Experienced data collection of monkey's electro-physiological data with multi-array electrode
- Data analysis of monkey's electro-physiological data with LDA and PCA.

**Diploma's Final Year Project** April 2014 to December 2014

**Advisors: Feng Min, Yu Qiang**

*Ring Finger and WD Repeat Domain 3 (RFWD3) is up-regulated in breast cancer and associates with breast cancer cell survival.*

- Conducted different biological experimental techniques such as: western blotting, qPCR, cell-viability assay
- Investigated on the importance of RFWD3 in the context of triple negative breast cancer survival