Lucas Peek

PhD

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Summary

As a neuroscientist with a PhD from the University of Geneva, I specialize in fMRI and fMRI-Neurofeedback and possess extensive expertise in statistical data analysis using Python, Matlab, and R. My education includes a dual Master's degree in Cognitive Neuroscience and Neuropsychology from VU University Amsterdam, supplemented by a research internship at McGill University. With a deep interest in neuropsychiatry and psychopathology, I am dedicated to applying my technical skills to advance our understanding of psychiatric disorders. My goal is to bridge the gap between cutting-edge neuroscience techniques and clinical practice, translating intricate neurological data into tangible improvements in patient care.

Experience

Université de Genève — **October 2023 - Present**
Post-Doctoral Researcher — Geneva, Switzerland

- Co-supervising ongoing fMRI-Neurofeedback studies, focusing on enhancing methodological approaches and participant engagement.
- Preparing and submitting research articles for publication in peer-reviewed journals.

Education

Université de Genève — **2016 - 2023**
Neuroscience — PhD
6/6

- Graduated: October 15, 2023.
- Supervisor: Prof. P. Vuilleumier.
- Thesis Projects:
  - *Face Perception via rt-fMRI Neurofeedback:* Investigated the roles of face-responsive areas in perception using rt-fMRI neurofeedback, challenging traditional models and advocating for non-hierarchical theories.
  - *Subliminal Face Processing Enhancement:* Utilized rt-fMRI NFB to enhance subliminal activation in the fusiform face area, exploring the implications for behavioral changes and therapeutic applications.
- Developed the 'PrepNFB' Toolbox: a GUI-based tool to streamline rt-fMRI neurofeedback experiments, available open-source on GitHub (link).

Vrije Universiteit Amsterdam / McGill University — **2014 - 2016**
Cognitive Neuropsychology — MSc
9/10

- Research-focused master's program combining cognitive psychology and clinical neuropsychology.
- Completed a research traineeship at the Montreal Neurological Institute, McGill University, Canada:
  - Supervisor: Dr. J.L. Armony.
  - Thesis: *Multimodal fNIRS Data Acquisition: Cortical Responses to Social Visual and Auditory Stimuli.* Explored fNIRS for measuring social stimulus responses. Managed experiment design, data acquisition, and analysis, demonstrating significant correlations with fMRI data.
  - Grade: 10/10.
- Conducted an extended clinical internship in neuropsychiatry at Vesalius, Altrecht (see internships).

Vrije Universiteit Amsterdam — **2009 - 2012**
Psychology — BSc
8.5/10

- Minor in Neuropsychology.
- Bachelors Thesis: *Pain Intensity and Working Memory in Multiple Sclerosis Patients.*

Hogeschool Utrecht — **2008 - 2009**
International Communication and Media — First-year qualification (Propedeuse jaar)
8/10

Internships

Clinical Internship in Neuropsychology — 2015 - 2016
Vesalius, Centre for Neuropsychiatry (Altrecht) — Woerden

Responsibilities included diagnosing neuropsychiatric patients, report writing, and treatment planning.

Research Internship in Neuropsychology — 2013
Vrije Universiteit Amsterdam — Amsterdam

Assisted in an fMRI study on adolescent risk-taking behavior.

Research Assistant — 2012
Vrije Universiteit Amsterdam — Amsterdam

Focusing on neuropsychological assessment of neurodegenerative diseases.

Publication

Real-time and Recursive Estimators for Functional MRI Quality Assessment — October 2022
Neuroinformatics

We developed a real-time quality assessment system for functional magnetic resonance imaging (fMRI) to detect signal changes and artifacts. The system automatically assesses whole-brain volumes and specific brain areas, enhancing data reliability for neuroimaging research and clinical applications. Integrated into OpenNFT software, it significantly improves the robustness of (real-time) fMRI experiments.

https://pubmed.ncbi.nlm.nih.gov/35297018

Scientific Communications

I'm a skilled communicator with a proven ability to convey complex information clearly and engagingly, both in written and oral formats. I strive for a high degree of accessibility and comprehension for diverse audiences, whether through academic publications, presentations, or collaborative discussions.

Article Preparation — 2023 - present
Preparing three publications for submission on fMRI-based neurofeedback in face processing. — Geneva / Utrecht

Poster Presentation: Investigating the Roles of FFA and OFA in Human Face Processing — July 2023
Organization for Human Brain Mapping (OHBM 2023) — Canada

Speaker — January 2022
Alpine Brain Imaging Meeting (ABIM 2022) — Siwtzerland

Delivered a 30 min oral presentation to a large, expert audience.

Poster Presentation: Regulating Subliminal Neural Activity in the Fusiform Face Area — December 2019
Real-time Functional Imaging and Neurofeedback (rtFIN2019) — Netherlands & Germany

Poster Presentation: Using fNIS to Measure Cortical Responses to Social Visual and Auditory Stimuli — 2015
Canadian Society for Brain, Behaviour and Cognitive Science (CSBBCS) — Canada

Awards

Best Poster Award — 2019
Real-time Functional Imaging and Neurofeedback Conference (rtFIN2019)

Technical Skills

Programming
Matlab, Python, R, Bash

Experimentation
Experienced in designing fMRI and behavioral tasks, including adaptive staircasing methods and subliminal presentation.

Cogent and Psychtoolbox

Real-time fMRI (NFB) Expertise
Collaborating developer for OpenNFT, developer of PrepNFB, experienced with Turbo Brain Voyager.

Analyses
Skilled in behavioral and fMRI data analysis (Nipype, SPM, FSL, Brain Voyager), including linear mixed modeling, Structural Equation Modelling (SEM), MVPA and connectivity analyses.

Practical Skills

Study Coordinator
Coordinated and conducted large-scale, longitudinal fMRI studies.

MRI Operator
Over 500 hours of experience as an MRI operator.

Teaching
Supervised neuroscience, psychology, and medical master students.

Neuropsychology
Trained in neuropsychological evaluation of neuropsychiatric patients.

Projects

Data Analyst
April 2023 - present

of fMRI data for a study conducted in Lebanon

The project is centered on evaluating the impact of a novel therapeutic approach on phantom limb pain in individuals with leg amputations.

Interests

Sports
bouldering, cycling, gravel cycling, high altitude hiking, scuba diving, rock climbing

Photography
landscape, portraits, macro, nature, cities

Reading
historical fiction, thriller, mystery, scifi, fantasy, drama, literary fiction

Languages

Dutch
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English
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German
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