



# Axel Faes

COMPUTER ENGINEER · POSTDOCTORAL RESEARCHER

Leuven, Belgium

✉ axel.faes@gmail.com | 🏠 theaxec.github.io | 📺 TheAxeC | 📺 axelfaes

## Educational background

### Doctoral Programme in Biomedical Science (PhD) in Computational Neuroscience

KU LEUVEN

Cognitive and Molecular Neuroscience

Leuven, Belgium

Sep. 2018 - May 2023

### Advanced Master of Science in Engineering (M.Sc.) in Artificial Intelligence (76% - Cum Laude)

KU LEUVEN

Engineering and Computer Science

Leuven, Belgium

Sep. 2017 - Jul. 2019

### Honoursprogramme of the Faculty of Engineering Science

KU LEUVEN

Research track - 18 ECTS (2 projects of 9 ECTS) completed in 2016 - 2017.

Leuven, Belgium

Sep. 2016 - Oct. 2018

### Master of Science in Engineering (M.Sc.) in Computer Science (Burgelijk Ingenieur - ir.) (76% - Cum Laude)

KU LEUVEN

Artificial Intelligence & Theoretical Computer Science

Leuven, Belgium

Sep. 2016 - Sep. 2018

### Bachelor of Science (B.Sc.) in Computer Science (79% - Magna Cum Laude)

UHASSELT

Physics and General courses

Hasselt, Belgium

Sep. 2013 - Jul. 2016

### Business Summer School: United in Manchester (0739)

THE UNIVERSITY OF MANCHESTER

International Business

Manchester, UK

Jul. 2015 - Aug. 2015

## Work & Research Experience

### Postdoc

KU LEUVEN

- Project: "Sign Language Alphabet decoding from intracranial brain activity"
- Promoter: Prof. Marc van Hulle
- Group: Computational Neuroscience, Laboratory for Neuro-and Psychophysiology, KU Leuven

Leuven, Belgium

May 2023 - Current

### Phd Candidate (FWO-Aspirant Fellowship)

KU LEUVEN

- Project: "Finger Movement Decoding: From Source-Localisation to Tensor Regression Modelling"
- Promoter: Prof. Marc van Hulle
- Group: Computational Neuroscience, Laboratory for Neuro-and Psychophysiology, KU Leuven

Leuven, Belgium

Oct. 2018 - May 2023

## Publications

### INTERNATIONAL JOURNAL PAPERS

- [1] **Axel Faes, Marc M. Van Hulle**, “Finger movement and coactivation predicted from intracranial brain activity using extended Block-Term Tensor Regression”, Journal of Neural Engineering.
- [2] **Axel Faes, Flavio Camarrone, Marc M. Van Hulle**, “Single finger trajectory prediction from intracranial brain activity using Block-Term Tensor Regression with fast and automatic component extraction”, IEEE Transactions on Neural Networks and Learning Systems.
- [3] **Axel Faes, Aurelie de Borman, Marc M. Van Hulle**, “Source space reduction for eLORETA”, Journal of Neural Engineering.
- [4] **Axel Faes, Iris Vantieghem, Marc M. Van Hulle**, “Neural Networks for Directed Connectivity Estimation in Source-Reconstructed EEG Data”, Applied Sciences.

## CONFERENCE PAPERS

- [5] **Robin Marx, Maarten Wijnants, Peter Quax, Axel Faes, Wim Lamotte**, “Web Performance Characteristics of HTTP/2 and comparison to HTTP/1.1”, International Conference on Web Information Systems and Technologies, pg 87-114.
- [6] **Robin Marx, Peter Quax, Axel Faes and Wim Lamotte**, “Concatenation, embedding and sharding: Do HTTP/1 performance best practices make sense in HTTP/2?”, WEBIST 2017 - Proceedings of the 13th International Conference on Web Information Systems and Technologies.

## EXTENDED ABSTRACTS

- [7] **Axel Faes, Mansoureh Fahimi Hnazaee, and Marc M. Van Hulle**, “Causal Graphical Modelling of Functional Connectivity from Reconstructed EEG Sources”, 8th International BCI Meeting (2021).
- [8] **Axel Faes and Tom Schrijvers**, “Towards a Core Language with Row-Based Effects for Optimised Compilation”, International Conference on Functional Programming 2017 Student Research Competition.
- [9] **Kashyap Todi, Brent Berghmans, Axel Faes and Matthijs Kaminski**, “Purpose-Centric Appropriation of Everyday Objects as Game Controllers”, CHI EA '16: Extended Abstracts of the SIGCHI Conference on Human Factors in Computing Systems. Late Breaking Work.
- [10] **Kashyap Todi, Donald Degraen, Brent Berghmans, Axel Faes, Matthijs Kaminski and Kris Luyten**, “Household Survival: Immersive Room-Sized Gaming Using Everyday Objects as Weapons”, CHI EA '16: Extended Abstracts of the SIGCHI Conference on Human Factors in Computing Systems. Student Game Competition.

## THESIS

- [11] **Axel Faes**, “Finger Movement Decoding: From Source-Localisation to Tensor Regression Modelling”, PhD Thesis 2023.
- [12] **Axel Faes**, “An Information Theoretical Approach to EEG Source-Reconstructed Connectivity”, Advanced Master’s Thesis 2018.
- [13] **Axel Faes**, “Algebraic Subtyping for Algebraic Effects and Handlers”, Master’s Thesis 2018.
- [14] **Axel Faes**, “Machine learning techniques for flow-based network intrusion detection systems”, Bachelor’s thesis 2016.

## POSTERS

- [15] **Axel Faes and Tom Schrijvers**, “Towards a Core Language with Row-Based Effects for Optimised Compilation”, International Conference on Functional Programming 2017 Student Research Competition.

## OTHER PUBLICATION

- [16] **Matija Pretnar, Amr Hany Shehata Saleh, Axel Faes and Tom Schrijvers**, “Efficient compilation of algebraic effects and handlers”, 2017 - CW Reports, CW708, 32 pp. Leuven, Belgium: Department of Computer Science, KU Leuven..

## TALKS, PRESENTATIONS AND OTHER MEDIA

- Sep. 19, 2017 “Honours student Axel Faes wins bronze medal in ACM SIGPLAN”, KU Leuven, Department of Computer Science.
- Sep. 19, 2017 “Student Axel Faes wins bronze medal in the ACM SIGPLAN Student Research Competition in ICFP conference”, KU Leuven, Department of Computer Science, DTAI.