

Ward Fadel

HUN-REN Research Centre for Natural Sciences (RCNS)
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EDUCATION

Ph.D. Candidate
(Information Science)
Defense: April 2026

- Pázmány Péter Catholic University (PPCU), Faculty of Information Technology and Bionics (ITK), Budapest, Hungary.
- HUN-REN Research Centre for Natural Sciences (RCNS), Institute of Cognitive Neuroscience and Psychology, Integrative Neuroscience Research Group (Hungarian Research Network, formerly Hungarian Academy of Sciences).
- Thesis: *Image-Based Motor Imagery EEG Classification with Deep Learning for Brain Computer Interfaces*.
Supervisors: Prof. Istvan Ulbert and Dr. Lucia Wittner

M.Sc. (2013–2018)
B.Sc. (2009–2013)

- Telecommunications Engineering, Tishreen University, Faculty of Mechanical and Electrical Engineering, Latakia, Syria.
- (*Awarded Certificate of Excellence — ranked 2nd/150 students*).

PROFESSIONAL EXPERIENCE

2019–Present

Researcher, HUN-REN RCNS, Institute of Cognitive Neuroscience and Psychology, Integrative Neuroscience Research Group ([link: UlbertLab](#))

- In vivo electrophysiology data analysis using Neuropixels and custom probe recordings (humans, rodents) across multiple brain regions.
- Real-time EEG-based BCI (Cyathlon 2020 & 2024, ETH Zürich; ranked **5th/11** BCI teams) with tetraplegic participants. Additional EEG experiments with healthy participants (HUN-REN, PPCU, MEREK Rehabilitation Center).
- EU Horizon 2020 POSITION-II (smart catheters and implants).
- Applied generative AI models to EEG and medical imaging (since 2019).

2018–2023

Teaching International M.Sc. and B.Sc. students at PPCU, ITK

- Software Defined Electronics Lab.
- Neural Interfaces and Prosthesis Lab.
- Electrophysiological Methods for the Nervous and Muscular Systems.

2013–2018

Lecturing/Teaching and Course/Lab Design for B.Sc. students at Tishreen University

- Cellular Networks Lab (*Telecommunications Department*).
- Processors Architecture and Microcontrollers Lab (*Telecom. Dept.*).
- Electronics Lab (Computer Science Department; *Telecom. Dept.*).
- Signal Processing (*Mechatronics Department; Telecom. Dept.*).
- C++ Programming (*Technical Engineering Institute*).
- Artificial Intelligence (*Applied Mathematics Department*).

PUBLICATIONS

- 1 [W. Fadel](#), A. Adolf, C. Köllöd, R. Fiáth, L. Wittner, and I. Ulbert, **Low gamma and spherical spline surface Laplacian enhance motor imagery EEG classification via multichannel spectral topographic maps**, *manuscript in preparation; being finalized*.

- 2 D. Meszéna, W. Fadel, R. Tóth, A. C. Paulk, S. S. Cash, Z. Williams, T. Kiss, M. Stippinger, L. Wittner, R. Fiáth, and Z. Somogyvári, **Optimal inter-electrode distances for maximizing single-unit yield per electrode in neural recordings**, *Microsystems & Nanoengineering*, vol. 12, art. 41, 2026, doi: 10.1038/s41378-025-01115-x.
Dataset: repo.researchdata.hu
- 3 A. Adolf, C. Köllöd, G. Márton, W. Fadel, and I. Ulbert, **The effect of processing techniques on the classification accuracy of brain–computer interface systems**, *Brain Sciences*, vol. 14, no. 12, art. 1272, 2024.
- 4 C. Köllöd, A. Adolf, G. Márton, M. Wahdow, W. Fadel, and I. Ulbert, **Closed-loop BCI system for Cybathlon 2020**, *Brain–Computer Interfaces*, vol. 10, no. 2, pp. 114–128, 2023, doi: 10.1080/2326263X.2023.2254463.
- 5 C. Köllöd, A. Adolf, G. Márton, M. Wahdow, W. Fadel, and I. Ulbert, **TTK dataset — 4-class motor-imagery EEG, 2022**. *Repository: repo.researchdata.hu*
- 6 M. Wahdow, M. Alnaanah, W. Fadel, A. Adolf, C. Köllöd, and I. Ulbert, **Multi-frequency band fusion method for EEG signal classification**, *Signal, Image and Video Processing*, 2022, doi: 10.1007/s11760-022-02399-6.
- 7 W. Fadel, C. Köllöd, M. Wahdow, Y. Ibrahim, and I. Ulbert, **Multi-class classification of motor imagery EEG signals using image-based deep recurrent convolutional neural network**, in Proc. 8th Int. Winter Conf. on Brain–Computer Interface (BCI), 2020, pp. 1–4, doi: 10.1109/BCI48061.2020.9061622.
- 8 W. Fadel, M. Wahdow, C. Köllöd, G. Márton, and I. Ulbert, **Chessboard EEG images classification for BCI systems using deep neural network**, in *Bioinspired Information and Communication Technologies*, ser. LNICST, vol. 329. Springer, 2020, pp. 97–104, doi: 10.1007/978-3-030-57115-3_8.
- 9 W. Fadel and I. Ulbert, **Convolutional neural network classifier for BCI systems using motor imagery EEG signals-to-image transformation**, online poster presentation, *CYBATHLON Symposium 2020*, ETH Zürich, Switzerland, 2020.

SOFTWARE

- Programming: Python, MATLAB, C++, VHDL, MIPS
- Neuro/EEG: SpikeInterface, Kilosort/Phy, EEGLAB
- Other: LabVIEW, OPNET, CorrelDRAW

LANGUAGES

- Arabic (Mother Tongue), English (Fluent), French (A1), Hungarian (A1)

FELLOWSHIPS & AWARDS

2020–2022	Ph.D. Excellence Fellowship, PPCU ITK
2019–2022	EFOP Research Fellowship, PPCU ITK
2018–2022	Stipendium Hungaricum Scholarship
2020	Best Presentation Award, Dubai BCI Workshop

INTERESTS

- Neurolinguistics.
- Mixed Realities (co-founded EEG+VR startup *EECruit*, PPCU ITK 2019–2020).
- Quantum Computing (PPCU ITK Courses 2019–2023).
- Filmmaking School (2015–2017).

REFERENCES

Prof. István Ulbert, MD, DSc

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Primary Ph.D. Supervisor

Dr. Lucia Wittner, PhD, DSc

Senior Research Fellow
Institute of Cognitive Neuroscience and Psychology
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Ph.D. Co-Supervisor