









# Konstantinos Patlatzoglou, Ph.D.

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## About

I'm a computer scientist with a background in AI, Neuroscience and Biomedical Engineering. For over a decade, my experience has focused on research and development of machine learning models for electrophysiological and neurophysiological signal analysis. Currently, I'm interested in exploring deep learning methods for scientific discovery and clinical applications.

## Experience

2023 – Present

### Imperial College London - Research Associate

- Researched and developed AI-based ECG models for automated, end-to-end analysis of electrocardiograms for diagnostic and prognostic tasks, including a novel explainable AI framework (VAE-SCAN) for ECG interpretation.
- Researched and developed computational methods for improved beat detection and delineation of ECG waveforms
- Developed a novel LSTM network for artifact correction of cardiac optical mapping signals.
- Collaborated with an interdisciplinary team of biomedical scientists, engineers, and clinicians/cardiologists.
- Published and presented research results in engineering and medical conferences (ESC, ISHNE)

**Skills:** • Python (*Tensorflow*) • ECG Analysis • Digital Signal Processing • Deep Learning • Project Management • Student Supervision

2017 – 2022

### University of Kent - PhD Researcher

- Researched and developed deep learning-based EEG models for automated, end-to-end, real-time monitoring of the depth of anesthesia.
- Collaborated with an interdisciplinary team of computer scientists, neuroscientists, and clinicians.
- Published and presented research results in scientific conferences, demonstrating a novel convolutional neural network for EEG analysis that achieved generalized performance across multiple anesthetic agents and protocols.

**Skills:** • Python (*Tensorflow*) • EEG Analysis (*MNE*) • Digital Signal Processing • Machine Learning • Deep Learning • Research Methods • Project Management

## Experience (continued)

2017 – 2021

### University of Kent - Teaching Assistant

- Prepared and taught undergraduate modules in Computer Science through lab supervision and assistance of students in groups of ~ 20 (Part time).
- Marked and provided feedback on student assignments and term projects

**Skills:** • Teaching • Written and Spoken Communication

## Education

2017 – 2022

### Ph.D. in Computer Science - University of Kent

Thesis title: *Deep Learning for Electrophysiological Investigation and Estimation of Anesthetic-Induced Unconsciousness.*

2015 – 2016

### M.Sc. in Sound and Music Computing - Universitat Pompeu Fabra

Grade: 8.53/10

Thesis title: *Neural and Music Correlates of Music-Evoked Emotions.*

2010 – 2015

### B.Sc. in Informatics - Aristotle University of Thessaloniki

Grade: 8.69/10 (First Class Honours)

Thesis title: *A study of causal interactions during music listening based on EEG signals using estimates of nonlinear correlations.*

## Areas of Proficiency

- Artificial Intelligence (ML/DL)
- Biomedical Engineering
- Signal Processing
- Teaching
- Electrophysiology (EEG/ECG)
- Sound and Music Perception/Cognition

## Skills

### Languages

Greek (*Native*), English (*Proficiency*)

### Coding

Python, Java, Matlab, C, SQL

### ML Libraries

Pandas, Scikit-learn, Tensorflow, Keras

### Misc.

MS Office,  $\text{\LaTeX}$ , Unix Shell, Git, Slurm

## Activities and Interests

- Music Composition/Production
- Cognitive Science/Psychology
- Evolutionary Biology
- Massive Open Online Courses
- Tennis

## Teaching




2017 – 2021

Introduction to Object-Oriented Programming

2017 – 2019

Advanced Object-Oriented Programming



## Teaching (continued)

- 2019 – 2021     Data Structures and Algorithms
- 2019 – 2020     Agile Development and Software Security
- 2018 – 2020     Computing Theory and Concurrent Programming

## Research Publications











- 1 Macierzanka, K., Sau, A., **Patlatzoglou, K.**, Pastika, L., Sieliwonczyk, E., Gurnani, M., ... Ng, F. S. (2025). Siamese neural network-enhanced electrocardiography can re-identify anonymized healthcare data. *European Heart Journal-Digital Health*, ztaf011.
- 2 Sau, A., Barker, J., Pastika, L., Sieliwonczyk, E., **Patlatzoglou, K.**, McGurk, K. A., ... Kramer, D. B. et al. (2025). Artificial intelligence-enhanced electrocardiography for prediction of incident hypertension. *JAMA cardiology*.
- 3 Sau, A., Zeidaabadi, B., **Patlatzoglou, K.**, Pastika, L., Ribeiro, A. H., Sabino, E., ... Waks, J. W. et al. (2025). A comparison of artificial intelligence-enhanced electrocardiography approaches for the prediction of time to mortality using electrocardiogram images. *European Heart Journal-Digital Health*, 6(2), 180–189.
- 4 Pastika, L., Sau, A., **Patlatzoglou, K.**, Sieliwonczyk, E., Ribeiro, A. H., McGurk, K. A., ... Ware, J. S. et al. (2024). Artificial intelligence-enhanced electrocardiography derived body mass index as a predictor of future cardiometabolic disease. *npj Digital Medicine*, 7(1), 167.
- 5 Sau, A., Pastika, L., Sieliwonczyk, E., **Patlatzoglou, K.**, Ribeiro, A. H., McGurk, K. A., ... Mandic, D. et al. (2024). Artificial intelligence-enabled electrocardiogram for mortality and cardiovascular risk estimation: A model development and validation study. *The Lancet Digital Health*, 6(11), e791–e802.
- 6 Sau, A., Ribeiro, A. H., McGurk, K. A., Pastika, L., Bajaj, N., Gurnani, M., ... Chen, J. Y. et al. (2024). Prognostic significance and associations of neural network-derived electrocardiographic features. *Circulation: Cardiovascular Quality and Outcomes*, 17(12), e010602.
- 7 **Patlatzoglou, K.** (2022). *Deep learning for electrophysiological investigation and estimation of anesthetic-induced unconsciousness* (Doctoral dissertation, University of Kent).
- 8 **Patlatzoglou, K.**, Chennu, S., Gosseries, O., Bonhomme, V., Wolff, A., & Laureys, S. (2020). Generalized prediction of unconsciousness during propofol anesthesia using 3d convolutional neural networks. In *2020 42nd annual international conference of the IEEE engineering in medicine & biology society (embc)* (pp. 134–137). IEEE.
- 9 **Patlatzoglou, K.**, Chennu, S., Boly, M., Noirhomme, Q., Bonhomme, V., Brichant, J.-F., ... Laureys, S. (2018). Deep neural networks for automatic classification of anesthetic-induced unconsciousness. In *Brain informatics: International conference, bi 2018, arlington, tx, usa, december 7–9, 2018, proceedings 11* (pp. 216–225). Springer International Publishing.

## Grants and Awards

- 2017 – 2020     Postgraduate research scholarship grant awarded by the University of Kent
- 2017 – 2021     Conference and summer school attendance grants awarded by the University of Kent

## Conferences and Workshops

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- May 2025     International Congress on Electrocardiology (ISHNE), Thessaloniki, Greece  
**Poster Presentation:** *A Novel Variational Autoencoder Framework for Explainable AI-ECG*
- Aug 2024     European Society of Cardiology (ESC) Congress, London, United Kingdom  
**Poster Presentation:** *Digitization of electrocardiographic images enable artificial intelligence-based mortality prediction*
- Sep 2020     Pattern Recognition in Neuroimaging (PRNI) Summer School, Vienna, Austria
- Jul 2020     42<sup>nd</sup> Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), Montreal, Canada  
**Invited Talk:** *Generalized Prediction of Unconsciousness during Propofol Anesthesia using 3D Convolutional Neural Networks*
- May 2020     Brain, Cognition, Emotion and Music (BCEM) Conference, Kent, UK
- Nov 2019     Studying Consciousness in the Electrical Brain - Luminous Workshop, Oxford, UK  
**Poster Presentation:** *Classification and Regression Analysis of Anesthetic States using Electroencephalography and Deep Learning*
- Jul 2019     3<sup>rd</sup> International Summer School on Deep Learning, Warshaw, Poland
- Jun 2019     1<sup>st</sup> Interdisciplinary Research on Brain Network Dynamics (Brandy) Summer School, Terzolas, Italy
- Dec 2018     11<sup>th</sup> International Conference on Brain Informatics, Arlington, Texas, US  
**Invited Talk:** *Deep Neural Networks for Automatic Classification of Anesthetic-Induced Unconsciousness*
- Sep 2018     Complex Systems Society (CCS) Conference, Thessaloniki, Greece  
**Invited Talk:** *Classification Analysis of Levels of Consciousness under Anesthesia, using Electroencephalography and Deep Learning Techniques*
- Sep 2017     International Symposium on Performance Science (ISPS), Reykjavik, Iceland  
**Poster Presentation:** *Neural and Music Correlates of Music-Evoked Emotions*