# Jakub Kopal

*Curriculum Vitae*

*Hovinveien 52B*
*Oslo, 0576*
*Norway*
✉ *kopal.kuba@gmail.com*
*DOB: 11.10.1990*

*Senior Applied Data Scientist bridging machine learning, complex data, and real-world decision-making across healthcare and public-sector domains.*

## Working experience

2024 – Present **University of Oslo, Oslo, Norway**, *MSCA Postdoctoral fellow*,
*Supervisor: Ole A. Andreassen*,
Marie Curie Postdoctoral fellowship
Involvement in Horizon Europe projects (environMENTAL, GenAI4EU, EU4Health - Brain AID)
Led cross-functional collaboration between computational and clinical consortium partners.
Delivered end-to-end analytical workflows for large-scale health datasets, balancing methodological rigor with project timelines and consortium requirements.

2021 – 2024 **McGill University & Mila - Quebec AI Institute, Montréal, Canada**, *Postdoctoral fellow*,
*Supervisor: Danilo Bzdok, Co-supervisor: Sébastien Jacquemont*,
Organized bi-weekly Journal Club. Mentored undergraduate and graduate students
Led collaborations between Mila and CHU Sainte-Justine, translating clinical research questions into machine-learning pipelines and coordinating delivery across computational and medical teams.

2017 – 2021 **Czech Academy of Sciences, Prague, Czech Republic**, *Ph.D. student*,
*Institute of Computer Science, Complex networks and brain dynamics group*,
Conducted doctoral research on brain connectivity and complex systems.
Applied advanced statistical modeling and network theory to neuroimaging data.

Jun 2015 – Aug 2015 **University of Glasgow, Glasgow, UK**, *Internship*,
Department of Bioengineering,
*Project: Development of a rapid point of care diagnostic device, utilizing surface acoustic waves to manipulate and then sense biological marker.*

## Education

2017 – 2021 **Brain and Cognition Research Center (CerCo), Toulouse, France**,
*Doctoral studies in Neuroscience (cotutelle PhD with UCT Prague)*,
*Dissertation: Using connectivity to investigate brain (dys)function*,
Supervisor: Emannuel J. Barbeau, Ph.D.

2016 – 2021 **University of Chemistry and Technology, Prague, Czech Republic**,
*Doctoral studies in Technical cybernetics (cotutelle PhD with UPS Toulouse)*,
Research on computational modeling, signal processing, and machine learning in biomedicine.
Teaching: Applications of Computer Science (Czech and English language),
Supervisor: Oldrich Vysata M.D., Ph.D., Co-supervisor: Jaroslav Hlinka, Ph.D.

2013 – 2016 **University of Chemistry and Technology, Prague, Czech Republic**,
*Master's degree*,
Field of study: Applied engineering informatics,
Focus on optimization methods, process modeling, and applied machine learning.
Relevant coursework: Engineering Optimization, Numerical Methods, Mathematical Modeling of Processes, Neural Networks, Pattern Recognition, Discrete Event Simulation.
*Diploma thesis: Memory circuits analysis by deep brain electrodes and complex continuous wavelet analysis*.

Sep 2014 – Dec 2014 **University of Oulu, Oulu, Finland**,
*Erasmus exchange student*,
Field of study: Bioengineering and computer science,
Project: Dynamic measurements of balance with footwear sensors for BoneWell Intelligence Ltd.

2010 – 2013 **University of Chemistry and Technology, Prague, Czech Republic**,
*Bachelor's degree*,
Field of study: Process engineering, informatics, management,
Strong foundation in chemical engineering and control systems.
Relevant coursework: Measuring and Control Engineering, Chemical Engineering, Signal Processing, Enterprise Process Management, Mathematics, Physics.
*Bachelor thesis: Dynamic Parameters of EEG during Meditation*.

## Academic record

Google scholar **https://scholar.google.com/citations?user=GfLE4fgAAAAJ**.

### Selected publications

**The end game: Respecting major sources of population diversity**,
*Kopal, J., Uddin, L., Bzdok, D.*,
Nature Methods.

**A pattern-learning algorithm associates copy number variations with brain structure and behavioural variables in an adolescent population cohort**,
*Kopal, J., Jacquemont, S., Bzdok, D., et al.*,
Nature Biomedical Engineering.

**Rare CNVs and phenome-wide profiling highlight brain-structural divergence and phenotypical convergence**,
*Kopal, J., Jacquemont, S., Bzdok, D., et al.*,
Nature Human Behavior.

**Deep learning reveals that multidimensional social status drives population variation in 11,875 US participant cohort**,
*Marotta, J., Kopal, J., Bzdok, D, et al.*,
PLOS One.

## Leadership, Mentoring & Service

**Supervision & mentoring**,
Master and Bachelor students in computational neuroscience and machine learning.

**Community Building**,
Organized department-wide workshops and social initiatives to foster cross-team collaboration.

**Grant contribution**,
Horizon Europe grants: environMENTAL, Generative AI 4 EU
Marie Curie Postdoctoral Fellowship
Barrande Fellowship – PhD mobility grant between Czech Republic and France.

**Science communication**,
Oral presentations at World Congress of Psychiatry, World Congress of Psychiatric Genetics, and the Organization for Human Brain Mapping
Data visualization consultant, University of Oslo.

**Other activities**,
Reviewer for NeuroImage, Scientific Reports, OHBM conference
Member of senior researcher hiring committees: University of Oslo, Mila - Quebec AI Institute.

## Technical Skills

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|---|---|
| Programming | Python, R, MATLAB, bash, Git, HPC clusters |
| ML & AI | Extensive experience with scikit-learn; familiar with PyTorch, JAX, Hydra, and MLflow; applications in predictive modeling and multivariate analysis. |
| Statistical modeling | Broad expertise in multivariate and machine learning methods, including PCA, CCA, PLS, LDA, Bayesian models (PyMC3), and time-frequency analysis (wavelet coherence) |

## Applied AI

Translating ill-defined domain problems into ML formulations

Designing reproducible analytics pipelines for high-stakes biomedical data

Communicating results and trade-offs to non-technical stakeholders

## International training courses

Nov 2015 **Universidad Politecnica de Madrid, Madrid, Spain**,
*Athens exchange program: Biosignal processing*.

Apr 2014 **Technische Universitat Munich, Munich, Germany**,
*Athens exchange program: Manipulation of time series in time and frequency spectrum*.

Nov 2013 **Ecole Nationale Superieure de Techniques Avancees, Paris, France**,
*Athens exchange program: Medical Imaging*.

## Languages

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|---|---|---|
| Czech | Native Speaker | |
| English | Fluent (C1+) | *+ 3 semesters of Academic writing course* |
| French | Fluent (C1) | |
| Norwegian | B1, actively improving | |

*References available upon request.*