VSB TECHNICAL UNIVERSITY OF OSTRAVA | FACULTY OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE

Clara

Dean

of Faculty of Electrical Engineering and Computer Science

VSB - Technical University of Ostrava

announces a selection procedure for a post of

Tenure-track Faculty Position in Topological & Geometric Methods for Data (TDA, Manifolds, Hyperbolic Space)

for Department of Computer Science

for the project **CLARA – Center for Artificial Intelligence and Quantum Computing in System Brain Research (EU Horizon, no. 101136607)**

The position is suitable for both women and men.

About the Role

FEECS invites applications for a **tenure-track** position (Assistant/Associate Professor) to build a research group at the intersection of **topology, geometry, and data**. The successful candidate will **continue applying geometrical and topological methods within the CLARA project**, with an emphasis on TDA, manifold learning, and hyperbolic space, to advance computational approaches for complex, multi-scale brain data, biomarkers, and decision support. This focus aligns with CLARA's vision in AI/ML and advanced computing for brain research.

Research Focus — Illustrative Directions

- **Topological Data Analysis (TDA)**
  - Persistent homology/cohomology for high-dimensional, temporal, and multi-omics or neuroimaging streams; statistical stability and uncertainty
  - Mapper/Reeb-graph pipelines; sheaf- and cell-complex methods; Hodge Laplacians & higher-order network modelling
  - Topology-aware regularization and interpretability in deep models; topological signatures as candidate biomarkers
- **Manifolds & Geometric Learning**
  - Riemannian optimization (SPD, Lie groups, Stiefel/Grassmann); intrinsic/spectral geometry (Laplace–Beltrami, diffusion maps)
  - Geometry-aware message passing on graphs/simplicial/cellular complexes; curvature-aware representation learning
  - Manifold priors for generative models and dynamics on latent manifolds
- **Hyperbolic Space & Hierarchical Structure**
  - Poincaré/Lorentz embeddings for ontologies, taxonomies, and disease trajectories; negative-curvature optimization
  - Mixed-curvature/product-space models for multi-scale brain networks and phenotype hierarchies
  - Evaluation of geometric fidelity, calibration, and downstream task performance
- **Pipelines & Open Science**
  - Scalable, reproducible software integrating TDA/geometry libraries; interfaces to CLARA data and compute workflows.

Responsibilities

- Research: Lead an internationally visible program in TDA/geometric learning for CLARA-relevant problems; publish at top venues
- Teaching: Offer graduate-level courses (e.g., Topological Data Analysis, Geometric ML, Riemannian Optimization, Hyperbolic Graph Embeddings); supervise MSc/PhD students

- Collaboration & Funding: Collaborate across FEECS and CLARA partners; secure national/EU funding; co-lead CLARA-aligned work packages where appropriate
- Service: Contribute to the faculty and wider university community

Full time equivalent: 1
Type of job contract: fixed-term employment contract with the possibility of extension
Expected start of employment: 1. 2. 2026 or as agreed

We require:
- PhD in Computer Science, Mathematics, Statistics, Electrical/Computer Engineering, or a closely related field
- At least one year of postdoctoral/assistant professor (or equivalent) experience, ideally with international exposure
- Publications demonstrating excellence in TDA, manifold/hyperbolic methods, or geometric ML (applications to neuro/biomedicine are a plus)
- Clear potential to build an independent research group; effective supervision and communication skills
- Active knowledge of the English language.

We offer:
- work in a promising organization,
- salary evaluation according to the candidate's experience,
- modern laboratory and classroom facilities,
- opportunity to participate in excellent research,
- possibility of further education,
- 6 weeks of holidays,
- flexible working hours,
- university kindergarten,
- company catering in the canteen,
- MultiSport card,
- other employee benefits according to the employer's offer.

Your personal data will be processed to the extent necessary for the implementation of the selection procedure in accordance with EU Regulation 2016/679.
https://www.vsb.cz/export/sites/vsb/en/.content/files/Informace-pro-uchazece-o-zamestnani-AJ.pdf

E-mail to katerina.kasparova@vsb.cz and sylva.adamcova@vsb.cz

- CV
- Motivation letter
- Research statement (2–4 pages) detailing a 3-year plan for TDA/manifold/hyperbolic methods within CLARA use-cases
- Three representative publications (PDFs)
- Contact information for three references

till 6 th January 2026

In the subject of the email, please state " Tenure Track CLARA".

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