Trung-Dung Hoang

trung.hoang@unibe.ch Google Scholar trungdunghoang hoangdzung

Education

University of Bern *Sept 2024 – present*
PhD in Biomedical Engineering

- **Supervisor:** Prof. Lisa M. Koch
- **Focus:** Simulation-based inference, generative modeling, causal ML for personalized treatment

École Polytechnique Fédérale de Lausanne (EPFL) *Sept 2021 - April 2024*
MSc in Computer Science

- **GPA:** 5.57/6
- **Master thesis:** Enhancing In-context Learning and Fine-tuning Strategies for NL-to-SQL Translation (Grade: 5.5/6)

Hanoi University of Science and Technology *Sept 2015 - July 2020*
BEng in Information Technology

- **GPA:** 3.57/4
- **Bachelor thesis:** Efficient Streaming Subgraph Isomorphism with Graph Neural Networks (Grade: 9.8/10 - Best thesis award)

Publications

1. Vinh Tong*, **Trung-Dung Hoang***, Anji Liu, Guy Van den Broeck, Mathias Niepert. **Rao-Blackwell Gradient Estimators for Equivariant Denoising Diffusion**, *NeurIPS 2025* (*Joint first authors).

2. **Trung-Dung Hoang**, Alceu Bissoto, Vihangkumar V Naik, Tim Flühmann, Artemii Shlychkov, Jose Garcia-Tirado, Lisa M Koch. **A Real-Time Digital Twin for Type 1 Diabetes using Simulation-Based Inference**, *International Workshop on Digital Twin for Healthcare, MICCAI 2025.* **(Oral)**.

3. Alceu Bissoto, **Trung-Dung Hoang**, Tim Flühmann, Susu Sun, Christian F Baumgartner, Lisa M Koch. **Subgroup Performance Analysis in Hidden Stratifications**, *MICCAI 2025.*

4. Tim Flühmann, Alceu Bissoto, **Trung-Dung Hoang**, Lisa M Koch. **Label-free estimation of clinically relevant performance metrics under distribution shifts**, *International Workshop on Uncertainty for Safe Utilization of Machine Learning in Medical Imaging, MICCAI 2025.* **(Oral)**.

5. Vinh Tong, **Trung-Dung Hoang**, Anji Liu, Guy Van den Broeck, Mathias Niepert. **Learning to Discretize Denoising Diffusion ODEs**, *ICLR 2024.* **(Oral)**.

6. Chi Thang Duong, Thanh Tam Nguyen, **Trung-Dung Hoang**, Hongzhi Yin, Matthias Weidlich, Quoc Viet Hung Nguyen. **Deep MinCut: Learning node embeddings by detecting communities**, *Pattern Recognition*, vol. 134, 109126, 2023.

7. Chi Thang Duong, **Trung-Dung Hoang**, Hongzhi Yin, Matthias Weidlich, Quoc Viet Hung Nguyen, Karl Aberer. **Scalable robust graph embedding with Spark**, *VLDB 2022.*

8. Chi Thang Duong, **Trung-Dung Hoang**, Hongzhi Yin, Matthias Weidlich, Quoc Viet Hung Nguyen, Karl Aberer. **Efficient streaming subgraph isomorphism with graph neural networks**, *VLDB 2021.*

9. Chi Thang Duong, Hongzhi Yin, **Trung-Dung Hoang**, Minh Hung Nguyen, Matthias Weidlich, Quoc Viet Hung Nguyen, Karl Aberer. **Graph embeddings for one-pass processing of heterogeneous queries**, *ICDE 2020.*

10. Dinh Viet Sang, **Trung-Dung Hoang**. **Two-stream deep residual learning with fisher criterion for human action recognition**, *SoICT 2018.*

Experience

Visiting Researcher *Espoo, Finland*
Approximate Inference Lab, Aalto University *Mar 2026*

- Research stay focused on advancing **simulation-based inference (SBI)** methods for medical modeling.

Doctoral Researcher *Bern, Switzerland*
Machine Learning in Medicine Lab, University of Bern *Sept 2024 – Present*

- **Machine Learning for Digital Twins in Diabetes:** Developed personalized diabetes models using **simulation-based inference (SBI)** to estimate patient-specific physiological parameters from **wearable device data**.
- **Causal Machine Learning:** Applying causal inference for personalized treatment effect estimation.

Research Assistant *Zurich, Switzerland*
Oracle Labs *Mar 2023 – Mar 2024*

- **Graph Neural Networks for Log Anomaly Detection:** Designed GNN models to identify abnormal patterns in large-scale system logs, improving robustness against unseen malware variants.
- **Natural Language to SQL via LLMs:** Investigated prompt engineering and retrieval-augmented generation (RAG) techniques to enhance text-to-SQL translation accuracy.

Research Student *Lausanne, Switzerland*
Distributed Information Systems Laboratory (LSIR), EPFL *Sept 2021 – Feb 2023*

- **Heterogeneous Federated Learning:** Proposed a dynamic neural architecture strategy for federated image classification on heterogeneous devices, achieving a 2.75% performance gain.
- **Technology Landscape Monitoring:** Built a context-aware language model for technology term extraction using NLI-based zero-shot learning, improving accuracy by 11%.

Awards and Honors

Best Paper Award *Oct 2025*
International Workshop on Uncertainty for Safe Utilization of Machine Learning in Medical Imaging, MICCAI 2025
For the paper *"Label-free estimation of clinically relevant performance metrics under distribution shifts"*.

Best Paper Award *Oct 2025*
International Workshop on Digital Twin for Healthcare, MICCAI 2025
For the paper *"A Real-Time Digital Twin for Type 1 Diabetes using Simulation-Based Inference"*.

University of Bern Short Travel Grant for (Post)Docs *Feb 2025*
Awarded to support a research visit to the Probabilistic Machine Learning Group at Aalto University.

EPFL Research Scholars MSc Program *Sept 2021*
Selected for a highly competitive program at EPFL, conducting research in machine learning and data systems.

Teaching

Teaching Assistant *Spring 2025*
University of Bern
Trustworthy AI in Medicine: Guided students in reading, understanding, and presenting research papers on trustworthy machine learning in healthcare; evaluated and graded presentations.

Talks and Presentations

Oral Presentation *Sept 2025*
International Workshop on Digital Twin for Healthcare, MICCAI 2025, Daejeon, South Korea
Presented *"A Real-Time Digital Twin for Type 1 Diabetes using Simulation-Based Inference"*

Invited Talk *Sept 2025*
12th SCRM PhD Students Retreat, Graduate School for Cellular and Biomedical Sciences (GCB), Bern, Switzerland
Presented research on simulation-based inference for personalized diabetes modeling.