# Felix Karl Michael Wagner

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## EDUCATION

**University of Oxford**  ⸻  Oxford, UK
**PhD in Computer Vision, Department of Engineering; <u>Supervisor</u>: Prof. Konstantinos Kamnitsas**  ⸻  Oct '21 – Oct '25
*PhD Thesis*: Advancing Federated Learning for Computer Vision in Medical Imaging

**Vienna University of Technology**  ⸻  Vienna, Austria
**Master of Science, Data Science; Final Grade:** *Pass with Distinction; GPA: 1.0 (highest poss. score)*  ⸻  Apr '19 – Nov '21
**Bachelor of Science, Software & Information Engineering**  ⸻  Mar '15 – Apr '19

**University of Illinois at Urbana-Champaign**  ⸻  Illinois, USA
Education Abroad, Joint Study Scholarship  ⸻  Aug '18 – Dec '18

## EXPERIENCE

**PhD Research – Department of Engineering, University of Oxford,** UK  ⸻  Oct '21 – present
- Developed scalable algorithms for federated learning, test-time adaptation, multi-modal models, parameter-efficient fine-tuning, 3D segmentation, and out-of-distribution detection in medical imaging
- Built end-to-end DL systems, including data preprocessing, model training, and evaluation, in **Python/PyTorch**
- Released open-source code (GitHub) and published at top-tier conferences (CVPR, WACV, MICCAI, AAAI)

**Teaching Assistant – Department of Engineering & Computer Science, University of Oxford,** UK  ⸻  Oct '22 – Feb '24
- Marked assignments and led classes to explain core concepts in database systems and optimization courses, while also delivering practical tutorials
- Topics included: Database theory (relational databases, query optimization), Optimization (linear/logistic regression, SVM, SGD), practical frameworks for distributed computing (Apache Spark and Hadoop)

**Freelance Software Engineer – Association for Protection of Creditors,** Austria  ⸻  June '20 – July '21
- Built Python software for data preprocessing to unify diverse formats and integrate them into an Oracle database
- Reduced the time to process loan default data from 1 hour to 10 minutes

**Interdisciplinary Research Project – Medical University of Vienna**, Austria  ⸻  Nov '20 – Apr '21
- Performed in-depth statistical analysis and visualization of sleeping disorder data from a representative Austrian adult population to understand key distributions and characteristics
- Applied **machine learning** models to identify significant predictors of chronic insomnia, extracting valuable insights to inform the interdisciplinary research team

**Software Engineer Intern – Knorr-Bremse**, Austria  ⸻  July '19 – Aug '19
- Implemented software features in **C#** for a large-scale public transportation system deployed by operators throughout Austria
- Increased maintainability of the software by reducing the time of changing complex build configuration files from hours to minutes by creating CI/CD-Pipelines in Azure DevOps
- Applied software design patterns in C# to improve code structure and maintainability

**Project Manager Assistant – Erste Bank,** Austria  ⸻  July '17; Oct '17 – Dec '17
- Collaborated with 10 team members in the Process Management Department on a nationwide software rollout for the Erste Group in Austria
- Conducted Data Analysis of the software development progress over a 1-year period

## SKILLS

**Programming Languages:** Python, Java, C#, R, Prolog
**Technologies & Tools:** PyTorch, Microsoft Azure, LaTex, Oracle/PostgreSQL Database, Git, SQL, Hadoop, Spark, Linux
**Languages:** German (native speaker), English (fluent)

## SELECTED PUBLICATIONS & RESEARCH

**[1]** <u>Felix Wagner</u>, Wentian Xu, Pramit Saha, Ziyun Liang, Daniel Whitehouse, David Menon, Virgina Newcombe, Natalie Voets, J. Alison Noble, Konstantinos Kamnitsas; *"Feasibility of Federated Learning from Client Databases with Different Brain Diseases and MRI Modalities"*, accepted for an **oral** presentation at **WACV 2025 [Paper] [Code]**

**[3]** <u>Felix Wagner</u>, Pramit Saha, Harry Anthony, J Alison Noble, Konstantinos Kamnitsas; *"DisoN: Decentralized Isolation Networks for Out-of-Distribution Detection in Medical Imaging"*, 2025, **under review [Paper]**

**[2]** <u>Felix Wagner</u>, Zeju Li, Pramit Saha, Konstantinos Kamnitsas; *"Post-Deployment Adaptation with Access to Source Data via Federated Learning and Source-Target Remote Gradient Alignment"*, accepted for an **oral** presentation at the **MLMI** workshop at **MICCAI 2023 [Paper] [Code]**

**[4]** Pramit Saha, <u>Felix Wagner</u>, Divyanshu Mishra, Can Peng, Anshul Thakur, David Clifton, Konstantinos Kamnitsas, J Alison Noble; *"F^3OCUS - Federated Finetuning of Vision-Language Foundation Models with Optimal Client Layer Updating Strategy via Multi-objective Meta-Heuristics"*, accepted at **CVPR 2025 (Highlights) [Paper]**

**[5]** Pramit Saha, Divyanshu Mishra, <u>Felix Wagner</u>, Konstantinos Kamnitsas, J. Alison Noble; *"Examining Modality Incongruity in Multimodal Federated Learning for Medical Vision and Language-based Disease Detection"*, accepted at **AAAI 2025 [Paper]**

**[6]** Pramit Saha, Divyanshu Mishra, <u>Felix Wagner</u>, Konstantinos Kamnitsas, J. Alison Noble; *"FedPIA--Permuting and Integrating Adapters leveraging Wasserstein Barycenters for Finetuning Foundation Models in Multi-Modal Federated Learning"*, accepted at **AAAI 2025** [Paper]

**[7]** Ziyun Liang, Harry Anthony, <u>Felix Wagner</u>, Konstantinos Kamnitsas; *"Modality cycles with masked conditional diffusion for unsupervised anomaly segmentation in MRI"*, accepted for an **oral** presentation at the **MMMI** workshop at **MICCAI 2023 [Paper]**

**[8]** Wentian Xu, Matthew Moffat, Thalia Seale, Ziyun Liang, <u>Felix Wagner</u>, Daniel Whitehouse, David Menon, Virginia Newcombe, Natalie Voets, Abhirup Banerjee, Konstantinos Kamnitsas; *"Feasibility and benefits of joint learning from MRI databases with different brain diseases and modalities for segmentation"*, accepted for an **oral** presentation at **MIDL 2024 [Paper]**

*Master's Thesis* - **Vienna University of Technology,** Austria                                                    Apr '20 – July '21
- Conducted in-depth research on the combination of symbolic AI and statistical machine learning methods for Knowledge Graphs in cooperation with the **University of Oxford**
- Developed an algorithm to inject recursive logical rules into Knowledge Graph Embeddings in **PyTorch**

## AWARDS & HONORS

- **Reviewer** for **TMI, MICCAI**; recognized with an honourable mention as an **outstanding reviewer**
- **Fully funded PhD via:**
  - **Angela-Krosik scholarship,** Anglo-Austrian Society
  - **Oxford-Reuben scholarship,** Reuben Foundation, University of Oxford
  - **Health Data Science CDT scholarship,** EPSRC UK
- **Joint-Study Scholarship,** Vienna University of Technology: Selected among top-performing students university-wide for an exchange programme at the University of Illinois at Urbana-Champaign, based on academic success

## VOLUNTEERING & INTERESTS

- **President – Oxford Austrian Society**                                                                          Apr '24 – June '25
  - Elected to lead the student society representing Austrian students at Oxford, promoting cultural exchange and academic dialogue
  - Organized and moderated public events with notable speakers, attended by 50+ participants
  - Represented the society at the Austrian Embassy and in meetings with diplomats and politicians
- **Personal Interests:** Guitarist and bass player in the band Penguins In Suits, with a strong interest in songwriting and composition; also passionate about snowboarding and tennis