Georgii Mikriukov

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Professional Summary

PhD Candidate in AI with **4+ years of experience in machine learning and deep learning**, specializing in **computer vision, NLP, and explainable AI**. Extensive hands-on experience in **developing and evaluating CNNs, ViTs, LLMs, and multi-modal architectures**. Proven expertise in **large-scale multi-modal information retrieval and model verification**, particularly in **remote sensing and autonomous driving**.

Proficient in **Python, PyTorch, and key ML libraries** (e.g., **Transformers, scikit-learn**). Experienced in **cloud computing (AWS: S3, EC2), containerization (Docker), and SQL/NoSQL data storage systems**. Strong skills in **technical writing, presentations, invention disclosure drafting, and collaborative research**.

Experience

AI Research Scientist | Jan. 2022 – Present

Continental AG, AI Lab Berlin

- **Enhanced model verification and debugging** by latent space analysis in YOLO-like **CNNs** and **ViTs** (DETR, SWIN).
- **Designed verification techniques** for **category confusion detection** and **outlier identification**.
- **Developed model selection methodologies** based on their learned knowledge.
- **Researched AI robustness and adversarial attack mitigation** in ML systems.
- **Authored and submitted invention disclosures** related to AI verification and safety.
- **Conducted license compliance checks** with **BlackDuck** and contributed to **open-source AI projects**.
- **Built and deployed AI models** with **PyTorch, AWS (S3, EC2),** and **Docker**, ensuring scalability and efficiency.
- **Contributed to KI Wissen and internal research projects**.
- **Mentored research interns and students**, providing technical guidance on AI safety.

Research Associate | Dec. 2020 – Dec. 2021

Technische Universität Berlin, Remote Sensing Image Analysis Group

- **Improved large-scale text-image retrieval performance** by **6%** using advanced DL techniques.
- **Reduced training costs** through **self-supervised learning**, eliminating the need for labeled data.
- **Optimized DL workflows** with **PyTorch, Slurm,** and **Docker** for scalable model training.
- **Implemented contrastive cross-modal retrieval** with **CNNs** and **LLMs** (BERT, Sentence-BERT, OPUS-MT).
- **Contributed to BigEarth research project**.
- **Mentored students** on AI and remote sensing research projects.

Research Associate | Nov. 2019 – Aug. 2020

Fraunhofer FOKUS / Technische Universität Berlin, Next Generation Networks Group

- **Led consortium formation and submitted research grant proposal** (ERA-NET Horizon 2020).
- **Contributed to LIMBO research project**.
- **Developed RESTful APIs** in **Python** for real-time **sensor network analysis** with **InfluxDB** for time-series data storage.

Research Associate | Jan. 2018 – Oct. 2019

Hochschule Mittweida, Forensic Science Investigation Lab

- **Developed cyber-forensics tools** for **text and audio analysis**.
- **Built a Java-based data crawler for Telegram** with **MongoDB** for forensic data collection and storage.
- **Implemented NLP algorithms** for **text mining, language identification, and topic extraction** using **Java**.
- **Developed noisy speech classification models** using **TensorFlow and CMUSphinx** for audio analysis.
- **Contributed to Security and Safety Solutions for Automation and Fabrication research project**.

Education

(Ongoing) Doctor of Engineering | Apr. 2022 – Present
Promotionszentrum IWIT, Hochschule Anhalt, Köthen, Germany

MSc in Information Management | Oct. 2015 – Jul. 2017
Hochschule Anhalt, Köthen, Germany

MEng in Electrical Engineering | Sep. 2015 – Jun. 2017
Perm National Research Polytechnic University, Russia

BEng in Electrical Engineering | Sep. 2011 – Jun. 2015
Perm National Research Polytechnic University, Russia

Skills

Programming Languages	Python, Java, SQL, Bash
AI / ML / DL	CV, XAI, NLP, GenAI, AI Safety, Self-Supervised Learning, Multimodal Learning
Deep Learning Frameworks	PyTorch, TensorFlow, scikit-learn, transformers, pandas, numpy, etc.
MLOps & Deployment	Git, Docker, AWS (S3, EC2), Slurm
Data & Storages	SQL (Oracle, Firebird), NoSQL (MongoDB, Cassandra, InfluxDB)
Soft Skills	Mentorship, project coordination, technical presentations, and technical writing
Languages	English (C1), German (B2), Russian (native)

Patents

EP4421682	Method for finding the cause of detection failures of an artificial neural network

Publications

ICASSP 2022	Unsupervised Contrastive Hashing for Cross-Modal Retrieval in Remote Sensing
ICIP 2022	An Unsupervised Cross-Modal Hashing Method Robust to Noisy Training Image-Text Correspondences
***XAI 2023**	Evaluating the Stability of Semantic Concept Representations in CNNs
ECML 2023	Quantified Semantic Comparison of Convolutional Neural Networks
XAI 2024	The Anatomy of Adversarial Attacks: Concept-based XAI Dissection
ECCV 2024	Concept-Based Explanations in Computer Vision: Where Are We Going?
IJCV (in revision)	Local Concept Embeddings for Analysis of Concept Distributions in Vision DNN Feature Spaces

*Best industry paper award: Awards – The World Conference on eXplainable Artificial Intelligence

References

Dr. Andreas Weinlich
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