SIMONA KOCOUR

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EDUCATION

Czech Technical University   *2024 – ongoing*
PhD in Computer Science, Computer Vision   *Prague, Czech Republic*
Research topic: 3D scene representation and understanding
Supervisor: Dr. Torsten Sattler

ELLIS PhD program   *2024 – ongoing*
PhD candidate in pan-European AI network of excellence
Co-supervisor: Prof. Dr. Siyu Tang (ETH Zurich)

Masaryk University   *2017 – 2019*
Master of Mathematics   *Brno, Czech Republic*
Thesis: Matrices and their application in statistics

Masaryk University   *2014 – 2017*
Bachelor of Mathematics   *Brno, Czech Republic*
Thesis: The bootstrap and related methods

WORK EXPERIENCE

Czech Institute of Informatics, Robotics and Cybernetics   *Apr 2024 - ongoing*
Researcher   *Prague, Czech Republic*
- member of Spatial Intelligence Group led by Dr. Torsten Sattler
- research objective: Novel 3D scene representation with ability to control the level of detail
- implementing neural 3D rendering and reconstruction (NeRF, Gaussian Splatting)
- using 3D geometry
- end-to-end model training (i.e. semantic 3D scene understanding)
- working with foundation models
- building evaluation pipelines
- Python, PyTorch

Emplifi   *Nov 2020 - Mar 2024*
Machine Learning Researcher   *Prague, Czech Republic*
- followed high impact papers and apply the methods into our company's product
- worked with large data sets from social media using PySpark, AWS, and Databricks
- lead, and managed my projects, followed by presenting results to C-level
- NLP - BERT, RoBERTa, DeepPavlov - built pipeline and fine-tuned models for classification tasks
- LLM - built summarization and short text generation pipelines using GPT
- behaviour scoring in time - built classification model with loss function emphasising customer behaviour with reflection on time

Aures Holdings   *Aug 2019 - Oct 2020*
Data Scientist   *Prague, Czech Republic*
- solved business tasks using ML algorithms in Python and SQL
- algorithmic pricing - built model for pricing goods automatically using general regression from Scikit-Learn
- behavioural scoring - built classification model using XGBoost

TECHNICAL SKILLS

Machine Learning:	3D Computer Vision, Neural Rendering, Neural Reconstruction, NLP PyTorch, TensorFlow
Software & Tools:	Python, R Docker, Git End-to-End Development, Software Prototyping
Data Processing:	AWS, Databricks, ElasticSearch, Presto PySpark, SQL
Languages:	Slovak (native) English, Czech (full professional proficiency) German (intermediate)

EXTRA-CURRICULAR

- Presented my most successful project Behavioural Scoring in Time, with developed loss function, at the VUT University in Brno.

- Organised internal ML hackathon with over 30 participants at Emplifi. Prepared all materials, data, guidance, validation statistics, and testing pipeline.

- Regularly present ML topics in front of local ML community.