Tarek Kunze, MSc.

Machine Learning Engineer
French-German citizenship

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https://takun.org
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Summary

Machine Learning Engineer specialized in Deep Learning research. Proficient in Python (JAX library), with a strong background in designing and training Machine Learning models. Experienced in AI applications such as Computer Vision, Natural Language Processing and Reinforcement Learning. Seeking opportunities to leverage my expertise in AI and Python development to drive impactful projects.

Work Experience

Nuée Lab *Februar 2024 - Current*
Freelance Machine Learning Engineer
- Developed and optimized ML/DL/RL models through training, debugging, and quality monitoring.
- Transferred code bases to Python/JAX for enhanced performance utilizing GPU/TPU hardware accelerators.

ISAE-Supaero *April 2023 - Sept. 2023*
RL Research Engineer - Internship
- Successfully migrated a Julia code base to Python utilizing JAX for GPU-accelerated massive parallelization of experiments.
- Conducted theoretical analysis on the characteristics of a fully connected neural network encoding technique.
- Employed meta-learning to identify optimal encoding functions.
- Authored a scientific article documenting research findings.
- **Skills:** JAX, Evosax, Brax, RL, Mujoco, Policy Search, Evolution Strategy.

CNRS, University of Strasbourg *Jan. 2022 - May 2022*
Research project in Cancer sub-typing
- Developed expertise in deep learning techniques for image spectrometry analysis.
- Analyzed and processed complex, high-dimensional spectrometry imaging datasets.
- Designed, implemented, and assessed convolutional classification models using PyTorch.
- **Skills:** MALDI imaging, Signal Processing, imzML.

Alliantech *April 2021 - July 2021*
Computer Vision ML Engineer - Internship
- Managed and processed large image datasets efficiently.
- Developed a real-time small bird detection system using video streams.
- Transferred a trained model to an embedded inference program in C++ on NVIDIA's Jetson Nano.
- **Skills:** OpenCV, YOLO, TensorRT, ONNX.

IRIT *Dec. 2020 - July 2021*
Research internship
- Conducted cutting-edge research in Natural Language Processing focusing on analogies.
- Processed extensive text databases.
- Designed and implemented experimental protocols to validate the theoretical framework.
- Authored a published scientific article documenting research findings.
- **Skills:** NLP, Hugging Face Transformers.

Skills

AI	Deep Learning, Reinforcement Learning, Evolutionary Strategies, Optimisation, Computer Vision, Natural Language Processing, Time series.
Programming	Python (JAX, PyTorch, Tensorflow, NumPy, Scikit-Learn, Spark), Ocaml, C/C++, SQL/NoSQL, MPI, OpenMP, CUDA, OpenCL.
Software	Git, Docker, TensorBoard, MLFLow, Open Source Development, Software Packaging, Testing, CI/CD, Linux, ETL, MLflow, DVC.
Soft	Writing of scientific/technical documents, Teamwork, Problem-solving.

Education

University of Strasbourg 2021 - 2023
MSc. Data Science and Complex Systems

University of Freiburg im Breisgau 2022 - 2023
MSc. Erasmus Program

University of Toulouse III 2018 - 2021
BSc. Computer Science

Publications

Searching Search Spaces: Meta-evolving a Geometric Encoding for Neural Networks, **Kunze, T.**, Templier, P., Wilson, D., 2024, *IEEE Congress on Evolutionary Computation (CEC)*

Analogies Between Sentences: Theoretical Aspects - Preliminary Experiments, Afantenos, S., **Kunze, T.**, Lim, S., Prade, H., Richard, G., 2021, *Symbolic and Quantitative Approaches to Reasoning with Uncertainty*

References

Pr. Gilles Richard - Emeritus Professor
Activities: Artificial Intelligence and Machine Learning
Mail: gilles.richard@irit.fr

Dr. Dennis Wilson - Associate Professor
Activities: Artificial Intelligence and Data Science
Mail: dennis.wilson@isae-supaero.fr

Leadership

Nighline April 2021 - Sept. 2021
Listening volunteer
- Trained in active listening to provide a caring space where students can express themselves anonymously.
- Contributed to internal discussions focused on enhancing the effectiveness and quality of the listening service.

CodeAnon Aug. 2019 - Sept. 2022
Co-founder, Treasurer, Vice-Treasurer
- Organized weekly workshops covering diverse computer science topics: web development, cybersecurity, AI, and theoretical computing.
- Successfully secured grants through well-crafted applications to acquire essential equipment for educational initiatives such as computers, Raspberry Pi's, and cloud services.
- Mentored volunteers in developing and executing their personal projects.

Languages

English	**French**	**German**
Professional	Native	Native