HASSAN ISMAIL FAWAZ

Senior Machine Learning Engineer | PhD in Artificial Intelligence

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Paris, FR

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publications



EXPERIENCES

Senior Machine Learning Engineer **Beyond Limits**

Feb 2024 - Present

Al Khobar, KSA

- Maintain and develop Large Language Models (LLMs) in production (GenAl / LLMOps)
- Benchmark and evaluate various vector databases (e.g. OpenSearch, Weaviate, Qdrant) for information retrieval
- Run various experiments for advanced Retrieval Augmented Generation (RAG) systems
- Fine tuning embedding models on private data using contrastive learning approaches
- Evaluate various techniques for fine tuning LLMs such as QLORA with Mistral, LLama, Gemma

Senior Machine Learning Engineer **Ericsson**

May 2022 - Jan 2024

Paris, France

- Data Architect: Scaling MLOps framework for deep learning
 - Build on top of managed Elastic K8s in AWS
 - Setup CI/CD pipelines for infrastructure as code (IAAC)
 - Implement experiment tracking and serving using MLFlow
 - Ensure reproducibility via Docker and Kubeflow
- Tech Lead: In-house research project on transfer learning
 - Setup best practices for Deep Learning experimentation
 - Code review & mentoring of PhD students & data scientists
 - Implement state of the art models for domain adaptation
 - Scale up Deep Learning experiments on Kubernetes
 - Define the research project roadmap & team responsibilities
 - Lead a monthly reading group on Artificial Intelligence
 - Animate training workshops for software best practices
- Machine Learning Engineer: developing a microservice
 - Follow software engineering best practices
 - Review code, unit & integration tests, CI/CD
 - Interact with Kafka based communication system
 - Develop ML Ops & model Life Cycle Management (LCM)
 - Implement and investigate various design patterns
- Data Engineer: develop big data processing pipelines
 - Spark for extracting & normalizing parquet data
 - Clustering & Forecasting of time series

Machine Learning Engineer

Besedo

math display="block" Oct 2020 - April 2022"

- Paris, France
- Content moderation using Machine Learning
 - Benchmark latest Computer Vision Deep Learning models
 - Guide & mentor junior data scientists and linguistics

EDUCATION

Université Haute-Alsace PhD in Machine Learning

- Advancing Deep Learning for Time Series Classification (TSC) (link)
- Contribute to Keras.io with a tutorial on Convolutional Neural Networks for TSC (link)
- Open sourcing the dl-4-tsc framework with 1k+ GitHub () stars (link)
- Publishing in top conferences and journals while reaching #1 of all time in DMKD (link)
- Student travel award for IEEE Big Data 2018 conference at Seattle (link)
- International collaborations: Monash University (AUS), Alan Turing Institute (UK), The Open University (NL)
- Teaching a **Deep Learning** course for masters students at ENSISA engineering school

Université de Bourgogne

Masters in Databases

- SQL, NoSQL, Graph
- Data Mining, Semantic Web
- Linear & Constraints Programming

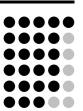
Université Antonine

Masters in Software Engineering

- JAVA, C#, Multi-threading, Web Services
- Networking, CCNA Routers & Switches

DEVELOPMENT SKILLS

Object Oriented Programming Software Design Patterns Algorithms & Data Structures Python, SQL, NoSQL Time & Memory Complexity MapReduce, Java, C++



OPERATION SKILLS

Git, Code Review, Unit Tests **Docker. Kubernetes** GitLab CI/CD Pipeline High Perf. Computing (HPC) Amazon Web Services (AWS) REST, gRPC, Message Brokers • • • • •



- Evaluate **NLP transformer** models for **text classification**
- Develop microservices for live computer vision inference
- Reduce latency using quantization, pruning, JIT & tensorRT
- Monitor model performance and decay (e.g. accuracy)
- Evaluate concept & data drift, covariate & label shift
- Orchestrate and automate model training using Airflow
- Contribute to **HuggingFace**'s open source datasets (link)
- Deliver proof-of-concepts for ML models using Streamlit

Visiting Machine Learning Researcher **Monash University**

Mov 2019 - Dec 2019

Melbourne, Australia

Classifying satellite image time series.

Deep Learning Lecturer

Université Haute-Alsace

₩ Sep 2018 - 2021

Giving an advanced course on deep neural networks.

Software Developer Intern

Orange Labs

mar 2017 - Sep 2017

◊ Nice, France

Java recommendation system based on RDF triplet data

Freelance Web Development

MradMCC

Mar 2016 - Aug 2016

Peirut, Lebanon

Creating a WordPress website that can be found here.

JOURNAL PUBLICATIONS

- Pialla, G. et al. (2023). "Time series adversarial attacks: an investigation of smooth perturbations and defense approaches". In: International Journal of Data Science and Analytics.
- Ismail Fawaz, Hassan, Benjamin Lucas, et al. (2020). "InceptionTime: Finding AlexNet for Time Series Classification". In: Data Mining and Knowledge Discovery.
- Ismail Fawaz, Hassan, Germain Forestier, Jonathan Weber, Lhassane Idoumghar, et al. (2019a). "Accurate and interpretable evaluation of surgical skills from kinematic data using fully convolutional neural networks". In: International Journal of Computer Assisted Radiology and Surgery 14, pp. 1611-1617.
- - (2019e). "Deep learning for time series classification: a review". In: Data Mining and Knowledge Discovery 33, pp. 917-963.
- Forestier, Germain et al. (2018). "Surgical motion analysis using discriminative interpretable patterns". In: Artificial Intelligence in Medicine 81, pp. 3–11.

DATA SCIENCE SKILLS

Torch, Pandas & HuggingFace ● ● ● ● Hydra, & Data Version Control Algebra & Probability Writing & Knowledge Sharing



CONFERENCE PAPERS

- Ismail-Fawaz, A. et al. (2023). "ShapeDBA: Generating Effective Time Series Prototypes using ShapeDTW Barycenter Averaging". In: ECML/PKDD Workshop on Advanced Analytics and Learning on Temporal Data.
- Pialla, Gautier et al. (2022). "Smooth Perturbations for Time Series Adversarial Attacks". In: Pacific-Asia Conference on Knowledge Discovery and Data Mining.
- Mathis, Florian, Hassan Ismail Fawaz, and Mohamed Khamis (2020). "Knowledgedriven Biometric Authentication in Virtual Reality". In: Extended Abstracts of the 2020 CHI Conference on Human Factors in Computing Systems Extended Abstracts.
- Rakhshani, Hojjat et al. (2020). "Neural architecture search for time series classification". In: IEEE International Joint Conference on Neural Networks.
- Ismail Fawaz, Hassan, Germain Forestier, Jonathan Weber, Lhassane Idoumghar, et al. (2019b). "Adversarial Attacks on Deep Neural Networks for Time Series Classification". In: IEEE International Joint Conference on Neural Networks.
- - (2019f). "Deep Neural Network Ensembles for Time Series Classification". In: IEEE International Joint Conference on Neural Networks.
- Ismail Fawaz, Hassan, Germain Forestier, Jonathan Weber, François Petitjean, et al. (2019). "Automatic alignment of surgical videos using kinematic data". In: Artificial Intelligence in Medicine.
- Ismail Fawaz, Hassan, Germain Forestier, Jonathan Weber, Lhassane Idoumghar, et al. (2018b). "Evaluating surgical skills from kinematic data using convolutional neural networks". In: International Conference On Medical Image Computing and Computer Assisted Intervention, pp. 214-221.
- - (2018d). "Transfer learning for time series classification". In: IEEE International Conference on Big Data, pp. 1367-1376.