Hussein El Amouri

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Professional Summary

Machine Learning Engineer with five years of experience in Artificial Intelligence, Python, and signal and image processing, combined with a strong foundation in electrical and telecommunication engineering. Recent work has focused on developing innovative techniques for active contrastive learning to improve incremental and constrained clustering, with applications in remote sensing and time-series data analysis. Experienced in working with ensemble methods, collaborative techniques, Autoencoders (AEs), and GANS to solve complex machine-learning problems.

Experience

Machine Learning Engineer *2024–Present*
AgroParisTech Laboratory, Paris, France

- Quantified positive/negative pair importance in contrastive learning and integrated incremental active clustering techniques.
- Applied on remote sensing and time series data.
- **Technologies Used:** PyTorch, Seaborn, Slurm, Pandas, Scikit-learn, TensorFlow.

Machine Learning Engineer *2023–2024*
Icube Laboratory, Strasbourg, France

- Developed a framework to guide experts in providing positive and negative pairs in contrastive learning frameworks.
- Developed algorithm for incremental contrastive learning for shapelets.
- Applied on remote sensing and time series data.
- Monitored model design for a GAN-based approach in digital pathology and strain translation.
- **Technologies Used:** PyTorch, Seaborn, Slurm, Pandas, Scikit-learn, TensorFlow, Slurm, GANs.

Machine Learning Scientest *2021–2023*
Icube Laboratory, University of Strasbourg, France

- Implemented contrastive learning leveraging Siamese networks for shapelet learning.
- Designed interpretable, constrained time-series transformations to enhance clustering tasks.
- Developed a framework to explain clustering results for time series using shapelets.
- Proposed models: Constrained DTW-Preserving Shapelets and Shapelet Cluster Explanation.
- Enhanced clustering performance by 20%, outperforming existing models.
- Collaborated with GANs, Autoencoders, Graph-based models and other algorithms to benchmark and compare to the proposed framework.
- **Technologies Used:** Python, TensorFlow, PyTorch, GANS, Graphs, Slurm, Docker

Technical Trainer and Lecturer *2021–2024*
University of Strasbourg, France

- Delivered Linux system training, from basics to advanced scripting.
- Taught technical English and research paper analysis.
- Mentored AI hackathon teams.

Machine Learning Intern *2019-2020*
GIPSA-LAB, Grenoble, France

- Benchmarked neural vocoders such as WaveNet, WaveGlow, LPCNet, and WaveRNN.
- Explored autoregressive, source-filter, flow-based, and GAN architectures.

Telecommunications Intern *2018-2019*
Ogero Center, Beirut, Lebanon

- Gained hands-on experience with telecommunication systems, architecture, and protocols.
- Studied technologies including aeroplane communication, internet systems, and radar technologies.

Skills

- **Programming Languages:** Python, Bash, C/C++, MATLAB, Assembly
- **Web Development:** PHP, HTML, CSS, JavaScript
- **Machine Learning Frameworks:** PyTorch, TensorFlow, Keras, TensorBoard, HuggingFace
- **Data Science:** Plotly, Seaborn, MongoDB, MySQL, MariaDB, XML, JSON
- **Software Development:** Git, Docker, Kubernetes/Terraform (currently learning)
- **High-Performance Computing:** Slurm, CUDA, Parallel Processing, Multithreading
- **Networking:** Cisco tools, Wireshark, SQL map, Nmap

Publications

- **2023:** *Pattern Recognition Journal*. Impact Factor: 8.
  Constrained DTW-Preserving Shapelets for Explainable Time-Series Clustering.
  DOI: `https://doi.org/10.1016/j.patcog.2023.109804`
- **2022:** *ECML Conference*. Core Ranking: A.
  Constrained DTW-Preserving Shapelets.
  DOI: `https://doi.org/10.1007/978-3-031-26387-3_2`
- **2020:** *Interspeech Conference*. Core Ranking: A.
  Evaluating the Extrapolation Capabilities of Neural Vocoders to Extreme Pitch Values.
  DOI: `https://doi.org/10.21437/Interspeech.2021-1547`

Education

Ph.D. in Computer Science *2020–2023*
University of Strasbourg, France

Master's in Signal and Image Processing (Dual Degree) *2019–2020*
Université Grenoble Alpes, France

Engineering in Electrical and Telecommunication *2015–2020*
Lebanese University, Beirut, Lebanon

Certificates

- **MLOps Training** (Ongoing)
- **Deep Learning and Applications** (2022)
- **Continue Integration with Git and docker** (2022)
- **public speaking** (2021)
- **Parrallel Computation, slrum** (2021)
- **Cisco Certified Network Associate 4** (2019)

Languages

English (Fluent), Arabic (Native), French (Beginner)