Sepideh Mamooler

Computer Science MSc Student, EPFL, Switzerland

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LinkedIn, GitHub

Strengths

- Research experience in **machine learning**, **computer vision** and **natural language processing**.
- Hands-on experience with **Python, C++, Java** and **machine learning frameworks**.
- Strong **communication skills** and **teamwork experience**.

Education

Swiss Federal Institute of Technology Lausanne (EPFL)

- **MSc Computer Science and Research Scholar** Sep 2020 - Aug 2023
  Focus on Machine Learning, Computer Vision, and Natural Language Processing.
  Current GPA: 5.56/6
- **BSc Computer Science** Sep 2017 - Aug 2020
  Focus on Machine Learning, Visual Computing and Signal Processing.
  BSc thesis in visual localization: A Radial Distortion Invariant Features Detector and Descriptor.
  Exchange year at **Swiss Federal Institute of Technology Zürich (ETHZ)**
  GPA: 5.03/6
- **Special Mathematics Course (CMS)** Sep 2016 - July 2017
  Mathematics and object oriented programming foundation year.
  Required prior to entering the BSc program.

Publication

Sepideh Mamooler, Remi Lebret, Stephane Remo Massonnet, and Karl Aberer. *An efficient active learning pipeline for legal text classification.* In Natural Legal Language Processing Workshop at EMNLP, 2022

Experience

MSc Thesis Student, Natural Language Processing Lab-EPFL Feb 2023 - Jun 2023

Video-based action segmentation by learning world models from language
- Developing tri-modal systems that integrate language, video and structured knowledge to advance action recognition.

Computer Vision Intern, Second Spectrum Jul 2022 - Jan 2023

Keypoint Detection and Camera Calibration
- Developing an evaluation pipeline for keypoint-based camera calibration services.
- Developing a hybrid convolution-attention model for keypoint detection of football fields.

Student Researcher, Distributed Information Systems Lab-EPFL Sep 2020 - Jun 2022

Text Classification with Active Labeling
- Developing an efficient active learning pipeline for legal text classification.

Student Researcher, Image and Visual Representation Lab-EPFL

Uncertainty-based Depth-Guided 3D Reconstruction Feb 2022 - Jul 2022
- Studying the effect of uncertainty estimation on NeRF-based view synthesis.
- Improving existing view synthesis models using depth completion and uncertainty estimation.

Deep Learning Vision-Language Model Explainability Sep 2021 - Jan 2022
- Improving an existing method for the explainability of Vision Transformers.
- Studying the explainability of CLIP, a vision-language deep learning model.

Student Summer Intern, Urban Transport System's Lab-EPFL Jun 2020 - Sep 2020

Traffic Dataset Annotation
- Contributing to creation of the PNEUMA traffic dataset.

Computer Vision and Geometry Group (CVG)-ETHZ Feb 2020 - Aug 2020

Radial Distortion Invariant Features Detector and Descriptor
- Improving SuperPoint feature detector and descriptor's robustness to radial distortion, BSc Thesis. [code, report]

Student Assistant, Analytic Number Theory Group-EPFL Sep 2018 - Feb 2019

Helping first-year BSc students with their weekly exercises in **Linear Algebra** and **Analysis**.

Course Project Experience

Visual Intelligence and Learning Lab-EPFL Sep 2021 - Jan 2022

- **Out-of-Distribution Detection**
  Comparing attention-based and convolution-based models' ability to identify out-of-distribution (OoD) data when performing image classification. [code, report]

Image and Visual Representation Lab-EPFL

- **Few-Shot Unsupervised Image-to-Image Translation** Feb 2021 - Jun 2021
  Designing and implementing an instance-based few-shot image-to-image translation algorithm.

Machine Learning and Optimization Lab-EPFL

- **Shape of Minima of Deep Learning Architectures** Feb 2021 - Jun 2021
  Studying and comparing the shape of minima of deep learning architectures including RNNs and Transformers for sequence modelling. [code, report]
- **Resource-Efficient Machine Learning** Oct 2020 - Dec 2020
  Developing an efficient ML model for on-implant neurological symptom detection to process neural data in real-time, with low power consumption, small on-chip area, and fast inference. [code, report]
- **Higgs Boson Identification from CERN Particle Accelerator Data** Sep 2020 - Oct 2020
  Implementing and using machine learning methods along with exploratory data analysis and feature processing and engineering on original data from CERN to identify the Higgs Boson.

Technical Expertise

- **Coding Languages:** Python, C/C++, Java
- **ML Frameworks and Libraries:** PyTorch, TensorFlow, Scikit-learn, Numpy, Pandas, Matplotlib
- **Computer Vision and NLP Libraries:** Pillow/PIL, OpenCV, Torchvision, timm, NLTK, HuggingFace
- **Other Technical Skills:** Git, Linux, Cluster Computing, Kubernetes

• **Project Management and Soft Skills:** Project design and organization, Problem solving, Teamwork, Excellent presentation skills in English

Volunteer Experience

• **EPFL Xplore, a student robotic association developing rovers** since Sep 2022
Member of the Navigation team, improving rover's capabilities in obstacle detection.

• **EPFL's Mentoring Program** since Sep 2022
Mentoring EPFL's incoming master's students in computer science.

Scholarships

Synapse AI Symposium by Bending Spoons Jun 2022
Awarded an scholarship to attend the Synapse symposium on artificial intelligence.

MSc Research Scholar Program-EPFL Jun 2020
A highly competitive program offering a unique research experience to MSc students alongside their studies.

Vahabzadeh Student Scholarship Sep 2016
Awarded a student scholarship by the Vahabzadeh Foundation for 6 consecutive years.

Languages

• **English**: Fluent spoken and written (C1), • **French**: Fluent spoken (B2), • **Persian**: Native language

Extra-curricular activities

When not studying I enjoy practicing yoga, running, reading, photographing, and indoor gardening.