Mohammad-Hossein Bahari

Applied AI Expert

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Swiss Permit L (job seeking)

Highlights

- Passionate about creating **AI-based products** with real-world impact
- 5+ years of work experience in applied deep learning and vision with leading companies such as **Honda**, **Valeo**, **Five AI**
- Diverse expertise in deep learning including in **foundation models, LLMs, generative models, transformers**, **sequence modeling**, **safety assessment,** and **interpretability** backed by a **solid theoretical and practical foundation**
- Proficient in software development, with experience on developing **autonomous systems** technology
- Proven **strong project management** skills with a track record of end-to-end project execution
- Strong **team-work experience** collaborating with various multi-national teams

Core Experiences

VITA Lab, EPFL, Lausanne, Switzerland [09.2018-10.2024]
Computer Vision Researcher

- Developed **foundation models** for the application of **autonomous systems**
- Employed various sequence prediction methods based on **LLMs, transformers,** and **generative models**
- Proposed evaluation strategies for assessing **safety and robustness** of models based on **adversarial attacks**
- **Managed more than 15 different projects** about **imitation / continual / transfer learning, knowledge-based models, Out-Of-Distribution**

Five AI (Bosch), Oxford, UK [06.2022-12.2022]
Internship on Interpretable Models for Autonomous Driving

- Developed an **explainability** method based on counterfactual explanations
- Analyzed different deep and non-deep learning-based models by existing **interpretability techniques**
- Developed second-order explanations by using **PCA decomposition** on the gradients

Honda, Tokyo (remote), Japan [09.2018-now]
Joint Research on Autonomous Driving and Social Robots

- Implemented **knowledge-based neural network** solutions
- Developed intention prediction methods for **social robots**
- Developed various evaluation strategies for **safety assessment** of autonomous driving cars

Valeo, Paris (remote), France [03.2022-06.2022]

- Developed a prediction model using **transformers**
- Implemented **graph-based** models with attention mechanism
- Implemented a **distributed parallel training** on 4 GPUs

Education

(PhD) Swiss Federal Institute of Tech. (EPFL),
Lausanne, Switzerland [09.2018-02.2024]
Computer Science

- Advisor: Prof. Alexandre Alahi
- Thesis: "Safeguarding deep trajectory forecasting models for autonomous driving"

(BSc/MSc) Sharif University of Technology,
Tehran, Iran [09.2012-06.2018]
Electrical and Computer Engineering

- Advisor: Prof. Mahdi Shabany
- Thesis: "Implementation of baseband processing blocks based on 5G Standard"

Skillsets

Computer Science (CS):
Foundation models | **LLM** | **Generative AI** | Transformers | Robustness | Interpretability | Imitation / Transfer Learning | Causality | knowledge-based AI |

Software:
Python (TF, PyTorch, Pandas, OpenCV, Numpy) | **Docker** | **HuggingFace**| C/C++ | **Kubernetes** | **Slurm** | Matlab | CUDA
MLOps | **CI/CD** |**Git**

Soft skills (with certificate):

- **Fundamentals of entrepreneurship**
  By: EPFL Innovation Park (Business Concept)
- **Foundations of project management**
  By: Coursera
- **Negotiation skills**
  By: LinkedIn

Honors and Awards

2018-2023	Awarded **Marie Skłodowska-Curie Fellowship by the European Union** for the doctoral degree
2018-2023	Accepted into **EPFLinnovators** program as a part of the Ph.D.
2018	**Rank 1st** among 20 Electrical engineering master students, Sharif university
2015	**Rank 5th among 25,000 applicants** in nation-wide entrance exam for MSc degree, Iran
2011	**Rank 54th among 300,000 applicants** in nation-wide entrance exam for BSc degree, Iran,

Publications (selected)

- "Injecting Knowledge in Data-driven Vehicle Trajectory Predictors", *Transportation Research part C (TRC)* 2021, link
- "Are socially-aware trajectory prediction models really socially-aware?", *Transportation Research part C (TRC)* 2022, link
- "Vehicle trajectory prediction works, but not everywhere", CVPR 2022, link
- "A Unified Framework for scalable Vehicle Trajectory Prediction", ECCV 2024, link
- "Causal Imitative Model for Autonomous Driving", Under review 2024, link
- "Certified Human Trajectory Prediction", Under review 2024, link

Teaching and Mentoring

Springs 2019-2022	**Deep Learning for Autonomous Vehicles (CIVIL-459),** EPFL, Lausanne, Switzerland *Instructor and course assistant (Main Instructor: Prof. Alexandre Alahi)*
Summer 2020 Summer 2021	**Supervised 20 Interns for 9 projects,** EPFL, Lausanne, Switzerland *Project manager and team lead*
2018-2024	**Supervised 9 Master students,** EPFL, Lausanne, Switzerland *Project manager and team lead*
Summer 2018	**Introduction to TensorFlow for Machine Learning,** Sharif university, Tehran, Iran

Talks

Fall 2022	**Waymo,** San Francisco, US
Fall 2022	**Stanford Vision and Learning Lab (Fei-Fei Li's group),** Stanford, US
Spring 2022	**Porsche group,** Stuttgart, Germany
Summer 2022	**Computer Webinar Series (CWS),** Amirkabir university, Tehran, Iran
Winter 2020	**Seminars of Advanced Topics in Computer Science (WSS),** Sharif university, Tehran, Iran

Languages

English (C2) | French (A2) | Persian (Fluent)

Hobbies

Hiking | Reading | Traveling