Kourosh Meshgi

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Seattle, WA, 98109

US Permanent Resident (Green Card Holder)

QUALIFICATIONS SUMMARY

- Expertise in **machine learning** and deep learning skills (such as **GenerativeAI**, **Transformers**, and **LLMs**) for multiple applications including **Computer Vision**, **NLP**, **Robotics**, **Large-scale Data Mining**, **Speech Recognition**, and **Pattern Recognition**.
- Developing cutting-edge ML algorithms and models, **publishing** in reputable conferences like ACL, CVPR, and InterSpeech.
- Proficient in implementing MLOps practices to streamline model development, deployment, and monitoring processes for efficient and scalable machine learning solutions including feature engineering, hyperparameter tuning, model selection, and automation.
- Experienced in **teaching**, **mentoring**, and **management**, with a proven track record in drafting **successful grant** applications.
- **Interdisciplinary researcher**, strong coding ability, debugging/understanding large code bases, data meta-analysis, & error analysis
- Highly skilled in TensorFlow, Keras, PyTorch, Transformers, Pandas, OpenCV, Numpy, Seaborn, SciPy, Sci-kit-learn, XGBoost, SpaCy, Mediapipe, & OpenPose, proficient with AWS, Image/Video/+Depth Datasets, Object detection, segmentation, & tracking
- Constructing novel ML methods for object detection, recognition, localization, tracking, and vision-aided navigation for Computer Vision, text classification, sentiment analysis, NER, language generation, word embeddings, language models (e.g., BERT, GPT, Mixtral) and MoE for NLP using supervised, unsupervised, active, multi-task, ensemble, self-supervised, and reinforcement learning

EDUCATION

Kyoto University, Graduate School of Informatics, Dept. of Systems Science — Kyoto, Japan
Ph.D., Informatics — September 2015

- Thesis: *Particle Filter-based Tracking to Handle Persistent and Complex Occlusions and Imitate Arbitrary Black-box Trackers*
- Research topic: Occlusion-aware visual tracking, 3D object reconstruction, Imitation learning

Amirkabir University of Technology, Dept. of Computer Engineering
M.Sc., Artificial Intelligence — October 2010
B.Sc., Computer Engineering — July 2008

CORE COMPETENCIES

- Machine Learning (ML)
- Computer Vision (CV)
- Computational Linguistics
- Natural Language Processing (NLP)
- Robotics, Reinforcement Learning (RL)
- Multi-Task Learning (MTL), Active Learning (AL)

PROFESSIONAL EXPERIENCE

RIKEN National Research Inst., Center for Adv. Intelligent Project
Research Scientist, Language Information Access Technology Team (Remote) — April 2019 – Present

Project 1: Generative AI, Bridging LLM and Computer Vision tasks to build effective Multimodal LLM applications
Project 2: Frontier Research on Multi-Domain and Multi-Task Learning in NLP and Computer Vision
Project 3: SHINRA, Categorizing 50 Language Wikipedia into Extended Named Entity categorizing

- Developing novel ML algorithms, MTL models, Fine-tuning LLMs, and using Fundamental Models of CV
- Leading & contributing to successful ML projects that have led to significant improvements in accuracy & transferability.
- Published in reputable conferences like ACL & InterSpeech, Serving as a reviewer for reputable ML conferences & journals.

Yodayoda
Computer Vision Lead & MLOps Manager, R&D Division — March 2020 – March 2021

Project: Automatic Creation/Update of the World Map for Various Types of Robots incl. Autonomous Cars & Drones

- Led a team of 7 researchers, strategized the company with plans, & monitored members' efforts for research & business marketing leading to better collaboration among researchers, and improved time efficiency and group morality.
- Delivered lectures on the latest ML & behavioral science research in academia & industry.
- Played a key role in designing the strategic plan for the company, and utilized my expertise in cutting-edge ML techniques to incorporate suitable solutions & effective off-the-shelf libraries, including those detailed in my publications, which led to increased group performance, integrate perception models with other modalities (e.g., LiDAR and IMU)
- Composed winning funding proposals that allowed for the implementation of various projects.

Kyoto University
Post-doctoral Researcher, Integrated System Biology Lab, Grad. School of Informatics — November 2015 – March 2019

Project 1: New Energy and Industrial Technology Development Organization (NEDO Samurai) Project, New Frontiers of Active Learning, Co-learning and DNN Applied in Visual Tracking, Unfolding the Active Learning Mechanism in Motor Cortex, Applying the Active Inference Brain-Inspired Motor Control to Robot Arm (Kinova MICO)

- Mentored & supervised other researchers, interns, and undergraduate and graduate students in machine learning projects & research.
- Won a paper award & grants for machine learning research projects.
- Increased the capabilities of object tracking models & their efficiency by up to 10% in the face of common visual conditions like occlusions to be used in various applications including autonomous cars and human-AI interactions.
- Presented research findings at conferences like CVPR'18 & technical insights at industry conferences, workshops & seminars.

Project 2: MEXT Post-K Project, "High-throughput methods to analyze structural and functional big-data of neural circuits" and "Brain-inspired architecture of artificial intelligence" subthemes, Distributed Multi-Modal Inference Framework

Development to run on Post K-Supercomputer, In collaboration with RIKEN QBiC Biochemical Simulation Lab, RIKEN AIP Machine Intelligence for Medical Engineering Team, & OIST Neural Computation Unit.

- Solved complex problems using machine learning techniques by collaborating with cross-functional teams.

Project 3: Computer Vision application using Mixed Reality (VR/AR) for verbal and non-verbal aspects of conversations, In collaboration with RIKEN AIP

- Led & managed a team of 8 in developing realistic non-verbal behavior in visual agents

Kyoto Robotics (formerly 3D MEDiA)
R&D Engineer, R&D Division April 2015 – October 2015

Project: Path Planning, Collision Detection and Avoidance, and Grasp Planning for Industrial Robots Integrated with Active 3D Vision Sensing Solution for Robotic Workstations (compatible with FANUC, Mitsubishi, Denso, Yasukawa, and Kawasaki robotic arms) as a part of 3D Vision Solution for Industrial Pick-and-Place

- Won NEDO prize from the Ministry of Economy, Trade & Industry of Japan, as R&D team
- Significantly enhanced the technological maturation and commercial realization of limited robotic workcells by optimizing arm trajectory, real-time collision detection, and avoidance by 7% reliability and scalability while maintaining the same accuracy

Kyoto University
Researcher, Bioimaging and Cell Signaling Lab, Medical School October 2014 – March 2015
Research Assistant, Integrated System Biology Lab, Grad. School of Informatics January 2012 – September 2014

Shahrpardaz
R&D Manager, Project Management Officer, R&D Division August 2010 – October 2011

Behpooyesh
Software Developer, R&D Division July 2010 – March 2011

IT Orbit
Software Testing R&D, QA Team May 2009 – March 2010

Data Processing
Telecom. Switches R&D, Mediation Team July 2006 – April 2007

Amir Kabir University of Technology (Tehran Polytechnique)
Research Assistant, Robotics Research Lab July 2007 – October 2010
Teacher Assistant October 2007 – August 2010
Researcher, Robotics Research Center October 2004 – March 2008

SELECTED PUBLICATIONS

- **K. Meshgi**, M.S. Mirzaei, and S. Sekine, "*Q-Learning Scheduler for Multi Task Learning Through the use of Histogram of Task Uncertainty*," In Proc. of ACL'22, RepL4NLP workshop, Dublin, Ireland, *2022*.
- **K. Meshgi**, M.S. Mirzaei, and S. Sekine, "*Uncertainty Regularized Multi-Task Learning*," In Proc. of ACL'22, WASSA workshop, Dublin, Ireland, *2022*.
- **K. Meshgi**, S. Oba, and S. Ishii, "*Efficient Diverse Ensemble for Discriminative Co-Tracking*," in Proc. of CVPR'18, IEEE, Salt Lake City, USA, *2018*.

Please find my **Google Scholar** at **https://scholar.google.com/citations?user=WejG0Z8AAAAJ&hl=en**

Publication record: **44** Peer-reviewed Conference & **7** Journal papers, **1** Book Chapter, **4** Technical Reports, **1** Best Paper Award

SKILLS

Expertise	Machine Learning, Computer Vision, NLP, Robotics, Applied Linguistics, MLOps, Software Development & Testing, Quality Assurance, Team Management, Strategic Planning, Funding proposal writing, Feasibility study
Technical	Python, C++, C#.NET, C, JavaScript, VB, Matlab, Deep Learning, Unity 3D, Virtual and Augmented Reality
Certificates	ITIL v3.0 Foundation Level Certified (EXIN/APM 2011), PMBOK 2008 Training & Workshop (2011), ISO 9001, 14001 & 18001 Training (2011), ISO 19011:2002 & 13485:2003 Certified Internal Audit (BRS 2011, Cert. #QM/IS-BR/134-349), ISTQB Foundation Level Training (2009)
Languages	Persian, English, Japanese

FUNDING & AWARDS

Received Grants-in-Aid for Scientific Research – JSPS KAKENHI-C, Japan	April 2017
Awarded ICT Innovation 2017 Award, Kyoto University, Japan	February 2017
Awarded Prize as R&D team of 3D MEDiA from Ministry of Industry (METI), Japan	2015
Received Japanese Government Scholarship from Ministry of Science (MEXT), Japan	April 2011 - March 2014
Awarded 3rd Place in International RoboCup 2005 Competitions, Japan	2005

AFFILIATIONS & SERVICES

Memberships: IEEE (Robotics and Automation Society, 2010-Present; Signal Processing Society, 2015-Present; Systems, Man, and Cybernetics Society, 2017-Present), CIPPRS, CALICO, EuroCALL (AI and NLP SIG)
Served as reviewer for multiple journals including IEEE MM, ACM Computing Survey, Springer NCAA, MDPI
Distinguished reviewer and org. committee of conferences including ACL, AAAI, COLING, CVPR, ICML, ECCV, ACCV
RoboCup Soccer Simulation Teams ("Kasra" Coach 2004-2005, "Aria" 3D 2006-2008, "Nemesis" 2D 2010)