Sina Malakouti

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Legal status in US: Permanent Resident

EDUCATION

University of Pittsburgh Aug 2020 - May 2024
Phd in Computer Science *Pittsburgh, PA*

· Advisor: Adriana Kovashka, Seong Jae Hwang

Amirkabir University of Technology Sep 2015 - May 2020
B.Sc. in Software Engineering *Tehran, Iran*

· GPA: 3.72/4

Related Coursework Computer Vision, Machine Learning, Natural Language Processing, Artificial Intelligence, Data Mining, Statistics, Linear Algebra, Algorithms, Data Structures, Database Design

INTERESTS

Machine Learning Deep Learning Computer Vision Representation Learning Medical Imaging

PUBLICATIONS

· **Sina Malakouti**, A.Sicilia, S.Hwang, "A MuST for Consistency Regularization in Semi-Supervised Medical Image Segmentation" - to be submitted

· **Sina Malakouti** et al."DeepTreeNetworks: A New Symbolic Deep Architecture." *DeCoDeML workshop, **ECML PKDD**, 2019* - Presented at the Conference

TECHNICAL SKILLS

Programming Languages	Python, Java , MATLAB, SQL, C/C++, R
ML & Deep Learning	PyTorch, DL4j, Scikit-learn, Weka, Keras, Tensorflow, Numpy, Pandas
Web Programming	JavaScript, Vue.js, Node.js, Express.js, jQuery, HTML/CSS, Flask, Jetty,
Database	MySQL, MongoDB, SQLite
Tools	Git, Docker, Postman, LaTeX
Misc	Data Engineering and Cleaning, Object Oriented, MVC, Problem Solving

EXPERIENCE

Graduate Research Assistant Aug 2020 - Present
University of Pittsburgh *Pittsburgh, PA*

· Conducted research on data-efficient approaches in Deep Learning and representation learning(Semi-Supervised, Weakly-Supervised, Self-Supervised) and their applications in Computer Vision, multi-modal problems, and Medical Imaging.

· Including but not limited to Image Segmentation, Object Detection, Out of distribution detection.

Machine Learning Image Processing Intern May 2022 - September 2022
Image Signal Processing (ISP), Apple *Cupertino, CA*

· Design and development of efficient machine learning methods for computer vision and image processing tasks. Responsible for proposing new ideas and developing and evaluating new imaging algorithms.

· The proposed approach enhanced the performance while being highly efficient compared to the state-of-the-art methods.

· Python, PyTorch, Matlab

Machine Learning Research Assistant, Intern July 2018 - Sep 2019
Johannes Gutenberg University *Mainz, Germany*

· Proposed a novel symbolic deep architecture with differentiable decision trees leading to a novel performance on imbalanced data while having only 2 layers.

· Implemented the project in **Java** and by using **DL4j** and **Weka** frameworks.

Machine Learning Engineer, Intern June 2019 - Sep 2019
Shahid Rajaei Hospital & Research Center *Tehran, Iran*

· Developed a Machine Learning pipeline to predict Pulmonary complications after Cardiovascular surgery leading to 20% performance improvement. **Python**, **scikit-learn**, and **Flask**.
· Data-cleaning, model training, cross-validation, and addressed issues such as imbalanced data problems.

PROJECTS

- **Domain Generalization for Object Detection**
  Python, PyTorch *Ongoing*
  · Working on proposing a novel technique to learn domain invariant features to unseen domains without using labeled data.
- **MuST for semi-supervised Medical Image segmentation**
  Python, PyTorch
  · Proposed a novel consistency regularization-based framework for brain lesion segmentation with feature-space augmentation. Achieved state-of-the-art performance against baselines and competitors by only having 3% labeled data.
- **Multimodal Transformer Fusion For Depression Prediction**
  Python, PyTorch
  · Learning joint representation of unaligned video, language, and audio features by fusing multimodal transformers for depression severity prediction task.
- **Weakly Supervised Object Detectors Robustness Toward Domain Shift**
  Python, PyTorch
  · Hypothesized dependency of Weakly Supervised Object Detectors (WSOD) on domain-specific features compared to fully supervised models.
  · Adapted a Consistency Regularization with style transfer to train robust WSOD against domain shift and enhanced detection performance by 2% on unseen domains.
- **Image-Caption Discourse Coherence Relation Prediction**
  Python, PyTorch
  Implemented & adapted various self-supervised methods such as ViLBERT and SwAV. Leveraged self-training for semi-supervised mage-text relation prediction.
  Application of Self-supervised Learning: High-Frequency Medical Data
  Python, PyTorch
- Adapted recent self-supervised models (SimCLR, CPC, and SwAV) for time-series electrocardiogram. Achieved 3% higher score compare to the fully-supervised baselines.

PROFESSIONAL SERVICES

Conference Reviewer: Winter Conference on Applications of Computer Vision (WACV), 2022
Empirical Methods in Natural Language Processing (EMNLP), 2022

HONORS & AWARDS

· Full SCI Fellowship, University of Pittsburgh
· Honored as outstanding student, Amirkabir University of Technology

EXTRA CURRICULAR & LEADERSHIP

President of Student Scientific Chapter Jan 2017 - March 2018
Computer Engineering, Amirkabir University of Technology *Tehran, Iran*

· Managed my team to organize more than 70 national and international contests, talks, and workshops. Collaborated with *Technische Universität München, Germany* and *KTH Royal Institute of Technology, Sweden.*
· Awarded as the best student organization.

Team Captain, Table Tennis 2022-Present
University of Pittsburgh *Pittsburgh, PA*