Amirmohammad Mansourian

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Education

M.Sc. in Computer Engineering, GPA:3.89/4 2021 - 2023
Sharif University of Technology Tehran, Iran

- **Thesis Title:** Deep Multi-Object Tracking by Part-Based Re-Identification in Soccer Matches
- **Selected Courses:** Machine Learning - Advanced Machine Learning - Deep Learning - Digital Image Processing - Advanced 3D Computer Vision - Natural Language Processing - Digital Signal Processing

B.Sc. in Computer Engineering, GPA: 3.75/4 2017 - 2021
Isfahan University of Technology Isfahan, Iran

- **Thesis Title:** Biometric Image Processing for Authentication and Identification of Persons
- **Selected Courses:** Design and Analysis of Algorithms - Artificial Intelligence - Applied Linear Algebra - Foundation of Computer Vision - Multimedia Systems - Computational Intelligence

Research Interests

Computer Vision Image/Video Understanding Deep Learning

Research Experience

Research Assistant Nov 2021 - Feb 2024
Image Processing Lab, Sharif University of Technology Tehran, Iran

- **Description:** The proposal and implementation of a multi-purpose part-based person representation method for part-based tracking of persons in team sport videos.
- **Description:** The proposal and implementation of a pair-wise distillation approach by transferring inter-class similarities for semantic segmentation.
- Supervisor: Prof. Shohreh Kasaei

Research Assistant Feb 2023 - Feb 2024
Language Processing & Digital Humanities Lab Tehran, Iran

- **Description:** An Experimental Survey on Farsi Transformer-based Retrival Question Answering.
- **Description:** Working on NLP techniques tailored for the linguistic variations in the Kurdish language family, providing linguistic resources, multilingual models, and NLP pipelines to address essential tasks and facilitate cross-dialect communication within the Kurdish-speaking community.
- Supervisor: Dr. Ehsaneddin Asgari

Research Internship Summer 2022
Image and Signal Processing Lab, UCLouvain Louvain-la-Neuve, Belgium

- **Description:** The development and implementation of a multi-object tracking solution exploiting re-identification descriptors.
- Supervisor: Prof. Christophe De Vleeschouwer

Undergraduate Research Assistant Mar 2021 - Aug 2021
Computer Vision Lab, Isfahan University of Technology Isfahan, Iran

- **Description:** The development on an open-source iris recognition system and making improvements in segmentation and feature encoding stages.
- Supervisor: Dr. Nader Karimi

Publications

1. F. Arefi **A. M. Mansourian**, and S. Kasaei. Deep Spectral Improvement for Unsupervised Image Instance Segmentation. *Plos One,* 2024.

2. A. Cioppa, S. Giancola, V. Somers, F. Magera, X. Zhou, H. Mkhallati, A. Deliege, J. Held, C. Hinojosa, **A. M. Mansourian**, and others. SoccerNet 2023 Challenges Results. *Sports Engineering,* 2024.

3. V. Somers, V. Joos, A. Cioppa, S. Giacola, S. A. Ghasemzadeh, F. Magera, B. Standaert, **A. M. Mansourian**, X. Zhou, S. Kasaei, and others. SoccerNet Game State Reconstruction: End-to-End Athlete Tracking and Identification on a Minimap. *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition,* 2024.

4. **A. M. Mansourian**, A. Jalali, R. Ahmadi, and S. Kasaei. Attention-guided Feature Distillation for Semantic Segmentation. *IEEE Transactions on Image Processing, (under review),* 2024.

5. N. Eslami, F. Arefi, **A. M. Mansourian** and S. Kasaei. Rethinking RAFT for Efficient Optical Flow. *International Conference on Machine Vision and Image Processing (MVIP), (best paper award),* 2024.

6. **A. M. Mansourian**, R. Ahmadi, and S. Kasaei. AICSD: Adaptive Inter-Class Similarity Distillation for Semantic Segmentation. *Multimedi Tools and Applications, (under review),* 2024.

7. **A. M. Mansourian**, V. Somers, C. De Vleeschouwer, and S. Kasaei. Multi-task Learning for Joint Re-identification, Team Affiliation, and Role Classification for Sports Visual Tracking. *In The 6th Int. Workshop on Multimedia Content Analysis in Sports, MMSports, Ottawa, Canada,* October 29, 2023.

8. **A. M. Mansourian**, N. K. Bavandpour, and S. Kasaei. An Efficient Knowledge Distillation Architecture for Real-time Semantic Segmentation. *AUT Journal of Modeling and Simulation,* 2023.

Teaching Experience

Teaching Assistant
Sharif University of Technology — Tehran, Iran

- Machine Learning (Supervisor: Prof. Hamid Beigy) — Spring 2023
- Scientific & Technical Presentation (Supervisor: Prof. Shohreh Kasaei) — Spring 2023
- Digital Image Processing (Supervisor: Prof. Shohreh Kasaei) — Spring 2023
- Advanced 3D Computer Vision (Supervisor: Prof. Shohreh Kasaei) — Fall 2022

Teaching Assistant
Isfahan University of Technology — Isfahan, Iran

- Design and Analysis of Algorithms (Supervisor: Dr. Mohammad Reza Heidarpour) — Fall 2019, Spring 2023
- Theory of Formal Languages (Supervisor: Dr. Hossein Falsafain) — Spring 2021
- Digital System Design Lab (Supervisor:Dr. Nader Karimi) — Spring 2020
- Basis of C Programming Lab (Supervisor: Dr. Elham Mahmoudzadeh) — Fall 2018, Spring 2019

Honors and Awards

- Participating as reviewer at CVSports workshop, CVPR — Mar 2024
- Best paper award at International Conference on Machine Vision and Image Processing — Mar 2024
- Participating as a part of organizer team of SoccerNet 2023 Challenges — Aug 2023

- Participating as reviewer in the peer review process for AUT Journal of Electrical Engineering — Jan 2023
- **Ranked 5th** at National Computer Engineering Olympiad — Oct 2021
- **Ranked 10th (top 0.05%)** in the National Entrance Exam for M.Sc. degree in Computer Engineering — Sep 2021
- **Ranked 7th** among undergraduate Computer Engineering students — 2017 - 2021
- **Ranked in top 1%** in the National Entrance Exam for B.Sc. of Iran, among more than 148,000 students in the field of Mathematics and Physics — Jul 2017

Skills

- **Programming Languages:** Python, C, C++, Java, MATLAB, R
- **Frameworks and Libraries:** OpenCV, Numpy, Pytorch, Tensorflow, Keras
- **Technical Skills:** Git, Latex, HTML, CSS, Microsoft SQL Server
- **Languages:** English, Persian, Kurdish

Selected Projects

- **Knowledge Distillation**
  Implementation of a novel knowledge distillation approach for semantic segmentation by transferring inter-class similarities from teacher to student network.
- **SoccerNet Game State Challenge**
  SoccerNet Development Kit for the Game State task and Challenge.
- **Multi-purpose Person Representation**
  Create a re-identification dataset from SoccerNet tracking dataset and multi-task training of a body part-based re-identification model for re-identification, team affiliation and role classification of persons in soccer matches.
- **Persian Question Answering**
  An Experimental Survey on Farsi Transformer-based Retrival Question Answering.

Test Scores

– **TOEFL iBT:** 101 (Reading: 27, Listening: 26, Speaking: 24, Writing: 24)

References

Prof. Shohreh Kasaei
Full Professor of Department of Computer Engineering, Sharif University of Technology
Email: kasaei@sharif.edu –Webpage: sharif.edu/kasaei

Prof. Christophe De Vleeschouwer
Full Professor of Computing Science and Engineering Department, UCLouvain
Email: christophe.devleeschouwer@uclouvain.be –Webpage: uclouvain.be/christophe.devleeschouwer

Dr. Ehsaneddin Asgari
Postdoctoral Researcher, Department of Computational Biology, Helmholtz Center for Infection Research
Email: asgari@berkeley.edu –Webpage: ocf.berkeley.edu/asgari