Kasra Darvish

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Research Interests

- Multimodal Learning, Representation Learning
- Computer Vision, Natural Language Processing
- Probabilistic Graphical Models
- Deep Learning, Bayesian Inference

Education

Ph.D. in Computer Science **2018-Present**
University of Maryland, Baltimore County *Maryland, USA*
- Advisor: Professor Cynthia Matuszek
- Research: Deep Multimodal Grounded Language Learning by Combining Different Modes of Learning
- GPA: 3.899/4.0

Master of Science in Computer Science **2018-2022**
University of Maryland, Baltimore County *Maryland, USA*
- Advisor: Professor Cynthia Matuszek
- Research: Grounded Language Learning
- GPA: 3.899/4.0

B.Sc. in Computer Science **2013-2018**
Shahid Beheshti University *Tehran, Iran*
- GPA: 3.78/4.0 • Last 2 years GPA: 3.92/4.0

Technical Skills

- **Programming and Tools**:
  - Python, PyTorch, Pandas, NumPy, Scikit-learn
  - Familiar with C++, MATLAB, Lisp, and Prolog
  - Bash, Oh My Zsh, Vim, Emacs
  - LaTeX, HTML, Markdown, Org Mode
- **Operating Systems**: Mac OS X, GNU/Linux

Publications

Multimodal Language Learning for Object Retrieval in the Face of Missing Modalities. **Kasra Darvish**, Edward Raff, Francis Ferraro, and Cynthia Matuszek. Under review at The Transactions on Machine Learning Research (TMLR), 2023.

A Spoken Language Dataset of Descriptions for Speech-Based Grounded Language Learning. Gaoussou Youssouf Kebe, Padraig Higgins, Patrick Jenkins, **Kasra Darvish**, Rishabh Sachdeva, Ryan Barron, John Winder, Donald Engel, Edward Raff, Francis Ferraro, Cynthia Matuszek. In press at the Thirty-fifth Conference on Neural Information Processing Systems (NeurIPS) Datasets and Benchmarks Track, 2021.

Discriminative and Generative Transformer-based Models For Situation Entity Classification. Mehdi Rezaee, **Kasra Darvish**, Gaoussou Youssouf Kebe, Francis Ferraro. arXiv preprint arXiv:2109.07434, 2021.

Towards Making Virtual Human-Robot Interaction a Reality. Padraig Higgins, Gaoussou Youssouf Kebe, **Kasra Darvish**, Don Engel, Francis Ferraro, Cynthia Matuszek. In press at the 3rd International Workshop on Virtual, Augmented, and Mixed-Reality for Human-Robot Interactions (VAM-HRI), Boulder, CO, USA, 2021.

Practical Cross-Modal Manifold Alignment for Robotic Grounded Language Learning. Andre T Nguyen, Luke E Richards, Gaoussou Youssouf Kebe, Edward Raff, **Kasra Darvish**, Frank Ferraro, Cynthia Matuszek. In press at Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR) Workshops, 2021.

Learning Object Attributes with Category-Free Grounded Language from Deep Featurization. Luke E. Richards, **Kasra**

Darvish, Cynthia Matuszek. In press at The IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Las Vegas, Nevada, USA, October 2020.

A Manifold Alignment Approach to Grounded Language Learning. Luke E. Richards, Andre T. Nguyen, **Kasra Darvish**, Edward Raff, Cynthia Matuszek. The Northeast Robotics Colloquium (NERC 2019), Philadelphia, Pennsylvania, USA, October 2019.

Research Experience

• Graduate Research Assistant, Robotics and Machine Learning — **Prof. Cynthia Matuszek**
IRAL Lab, University of Maryland, Baltimore County — *May 2019 - Present*

• Research Assistant, Deep Learning — **Prof. Hadi Farahani**
Shahid Beheshti University — *Nov. 2017 - May 2018*

• Research Assistant, Computational Geometry — **Prof. Farnaz Sheikhi**
Shahid Beheshti University — *Feb. 2017 - May 2018*

• Research Assistant, Image Processing — **Prof. Alireza Tavakoli**
Shahid Beheshti Univeristy — *May 2017 - July 2017*

Teaching Experience

• Graduate Teaching Assistant, Algorithms — **Prof. Paul Burkhardt**
University of Maryland, Baltimore County — *Jan. 2019 - May 2019*

• Graduate Teaching Assistant, Algorithms — **Prof. Christopher Marron**
University of Maryland, Baltimore County — *Sept. 2018 - Dec. 2018*

• Teaching Assistant, Computational Geometry — **Prof. Farnaz Sheikhi**
Shahid Beheshti University — *Sept. 2017 - Jan. 2018*

• Teaching Assistant, Compiler Theory — **Prof. Adel Hosseini**
Shahid Beheshti University — *Sept. 2017 - Jan. 2018*

• Teaching Assistant, Automata Theory — **Prof. Hadi Farahani**
Shahid Beheshti University — *Feb. 2016 - July 2016*

Honors and Awards

• Morgan Stanley scholarship recipient as a Data Science researcher ($5,000) — **2018-2019**
University of Maryland, Baltimore County — *Maryland, USA*

• Ranked as top 1% among computer science students — **2018**
Shahid Beheshti University — *Tehran, Iran*

• Exempted from M.Sc. university entrance exam as an exceptional-talent student — **2017**
Nationwide Universities Graduate Entrance Exam — *Iran*

• Ranked as top 1% among more than 250,000 students — **2013**
Nationwide Universities Entrance Exam — *Iran*

Conference Reviewer

• Neural Information Processing Systems (NeurIPS): *2022*

• Neural Information Processing Systems (NeurIPS): *2021*

• Intelligent Robots and Systems (IROS): *2020*

Memberships and Services

• **Vice President of Iranian Graduate Student Association** **2022 - 2023**
University of Maryland, Baltimore County *Maryland, USA*

• **Secretary of Iranian Graduate Student Association** **2018 - 2019**
University of Maryland, Baltimore County *Maryland, USA*

• **IOI Office Member** **Aug. 2017**
The 29th International Olympiad in Informatics *Tehran, Iran*

• **Executive Director of "Pardazeh"** **Sept. 2014 - Nov. 2015**
The Scientific Journal of Computer Science Association, SBU *Tehran, Iran*

Notable Projects

• Mixture Models : Implementing different mixture models using Expectation Maximization (EM) algorithm
• LARI : An AI agent to play a card game similar to spades using Monte Carlo Tree Search algorithm combined with a simple rule based agent
• **Pedestrian Detection** by Support Vector Machine and Histogram of Oriented Gradients in **MATLAB**
• An adversarial **2D game** in **C++** with **Minimax** algorithm for the agent
• A talk on **Principal Component Analysis (PCA) and Eigenface** at Shahid Beheshti University
• **Ball Mania**, a **2D game** developed in **C++** using its graphic library
• **Chromatic Art Gallery Problem** for specific type of polygons
• **Prolog** program to solve Einstein's riddle