

# Kasra Darvish

Maryland, USA

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## RESEARCH INTERESTS

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

## EDUCATION

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### Ph.D. in Computer Science

*University of Maryland, Baltimore County*

- Advisor: Professor Cynthia Matuszek
- Research: Deep Multimodal Grounded Language Learning by Combining Different Modes of Learning
- GPA: 3.899/4.0

2018-Present

*Maryland, USA*

### Master of Science in Computer Science

*University of Maryland, Baltimore County*

- Advisor: Professor Cynthia Matuszek
- Research: Grounded Language Learning
- GPA: 3.899/4.0

2022

*Maryland, USA*

### B.Sc. in Computer Science

*Shahid Beheshti University*

- GPA: 3.78/4.0
- Last 2 years GPA: 3.92/4.0

2013-2018

*Tehran, Iran*

## TECHNICAL SKILLS

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### • Programming and Tools:

- Python, PyTorch, Pandas, NumPy, Scikit-learn
- Bash, Oh My Zsh, Vim, Emacs
- Familiar with C++, MATLAB, Lisp, and Prolog
- $\LaTeX$ , HTML, Markdown, Org Mode

### • Operating Systems: Mac OS X, GNU/Linux

## PUBLICATIONS

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

*A Spoken Language Dataset of Descriptions for Speech-Based Grounded Language Learning.* Gaoussou Youssouf Kebe, Pdraig 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.* Pdraig 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

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- **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 University  
May 2017 - July 2017

## TEACHING EXPERIENCE

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- **Guest Lecturer, Machine Learning (Undergrad/Graduate Course)** **Prof. Francis Ferraro**  
University of Maryland, Baltimore County  
Spring 2023
- **Guest Lecturer, Machine Learning (Undergrad/Graduate Course)** **Prof. Cynthia Matuszek**  
University of Maryland, Baltimore County  
Fall 2020
- **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

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- **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

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- **Neural Information Processing Systems (NeurIPS):** 2021 - Present
- **ACM/IEEE International Conference on Human-Robot Interaction (HRI):** 2023
- **Intelligent Robots and Systems (IROS):** 2020

## MEMBERSHIPS AND SERVICES

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- **Computer Science Department Hiring and Admissions Committee** 2024  
*University of Maryland, Baltimore County* Maryland, USA
- **Organizer of Machine Learning Reading Group** 2021 - Present  
*University of Maryland, Baltimore County* Maryland, USA
- **Vice President of Iranian Graduate Student Association** 2022 - 2023  
*University of Maryland, Baltimore County* Maryland, USA
- **Founder of Bookology: An Online Book Club with Over 200 members** 2021 - Present  
*Bookology* Online
- **Publishing Scientific and Academic Content for Free** 2019 - Present  
*Science Communicator* Online
- **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
- **Computer Science Department Hiring and Admissions Committee** 2024  
*University of Maryland, Baltimore County* Maryland, USA
- **IEEE Graduate Student Member** 2022 - Present

## NOTABLE PROJECTS

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- **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