

# Mobina Pournemat

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## EDUCATION

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- **University of Maryland, College Park** Maryland, USA  
*Ph.D. in Computer Science; Advised by Prof. Soheil Feizi; GPA: 4/4* Aug. 2024 - Present
- **Sharif University of Technology** Tehran, Iran  
*B.Sc. in Computer Engineering* Sep. 2018 - Feb. 2023

## RESEARCH INTERESTS

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Large Language Models, Efficient Inference, Reasoning Faithfulness

## RESEARCH EXPERIENCE

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- **University of Maryland, College Park** Maryland, USA  
*Research Assistant; Advisor: Prof. Soheil Feizi* Aug. 2024 - Present
  - **Exploring LLMs' Probabilistic Reasoning Capabilities:**  
Developed a comprehensive benchmark to evaluate LLMs' abilities on probabilistic tasks, and uncovered their strengths and weaknesses.
  - **Efficient Speculative Reasoning:**  
Adapting speculative decoding techniques to reasoning settings in order to accelerate LLMs' inference on challenging problems.
- **Institute of Science and Technology Austria (ISTA)** Klosterneuburg, Austria  
*Machine Learning Intern; Supervisor: Prof. Johann Danzl* Nov. 2023 - Jul. 2024
  - **3D Semantic Segmentation, Microscopy Image Analysis:**  
Developed an efficient pipeline for automated semantic segmentation of brain microscopy images using *Segment Anything*.
- **Sharif University of Technology** Tehran, Iran  
*NLP Research Assistant; Advisor: Dr. Ehsaneddin Asgari* Jul. 2022 - Oct. 2023
  - **Persian Syntactic and Semantic Error Correction tool:**  
Developed an auto-correction tool for Persian text, combining a BERT-based language model with rule-based modules.
- **Sharif University of Technology** Tehran, Iran  
*Computer Vision Research Assistant; Advisor: Dr. Mohammad Hossein Rohban* Sep. 2021 - Jul. 2022
  - **Anomaly Detection with Autoencoders; Semantic Segmentation:**

## WORK EXPERIENCE

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- **Behin Bazaar Marketing Agency** Tehran, Iran  
*Data Analyst, Business Intelligence* Apr. 2023 - Oct. 2023
  - **Data Analysis, Database Design, Data Preprocessing, Visualization, Reporting:**
- **AIMedic** Tehran, Iran  
*Machine Learning for Healthcare Intern* Jul. 2021 - Sept. 2021
  - **Data Science, Classification, Semantic Segmentation:**

## PUBLICATIONS

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- **Reasoning Under Uncertainty: Exploring Probabilistic Reasoning Capabilities of LLMs**  
*M Pournemat, K Rezaei, G Sriramanan, A Zarei, J Fu, Y Wang, H Eghbalzadeh, S Feizi - (Under Review at ACL 2026)*
- **SliderEdit: Continuous Image Editing with Fine-Grained Instruction Control**  
*A Zarei, S Basu, M Pournemat, S Nag, R Rossi, S Feizi - (Under Review at CVPR 2026)*

## SELECTED PROJECTS

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- **Efficient LLM Reasoning with Speculative Chain-of-Thought (Dec. 2025):**  
Accelerating LLM reasoning by adapting speculative decoding's draft-target pipeline while preserving accuracy.
- **Quantifying Attributional Bias in LLM Toxicity Detection (Nov. 2025):**  
Exploring attributional bias in LLMs by measuring how toxicity scores for identical comments change when they are attributed to different author identities.
- **Benchmarking Multi-Stage Vulnerability Reasoning in LLMs (Oct. 2025):**  
Evaluating the effect of explicit reasoning and post-verification on the performance of LLMs in vulnerability detection.
- **3D Semantic Segmentation of Microscopy Images (Jun. 2024):**  
Developing an efficient pipeline for automated semantic segmentation of brain microscopy images using *Segment Anything*.
- **Explainable Detection of Online Sexism (May 2022):**  
SemEval-2023, Task 10, Sentiment Analysis
- **Recommender System Design (May 2021):**  
Based on content-based and collaborative filtering methods.
- **Persian Syntactic and Semantic Error Correction Tool (Feb. 2021):**  
Developing an automated tool for identifying and correcting misspellings in Persian text using a BERT-based language model and complementary modules.

## TEACHING ASSISTANT EXPERIENCE

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- **Introduction to Artificial Intelligence:** Fall 2024
- **Natural Language Processing:** Spring 2022
- **Data Structures and Algorithms:** Fall 2022
- **Probability and Statistics:** Spring 2021
- **Computer Simulation:** Fall 2021

## RELEVANT COURSEWORK

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- **Natural Language Processing:** 4/4 (A)
- **Long-Context Language Models:** 4/4 (A)
- **Multimodal Foundation Models:** 4/4 (A)
- **Large Language Models Security and Privacy:** 4/4 (A)
- **Artificial Intelligence:** 20/20
- **Data Structures and Algorithms:** 19.6/20
- **Stanford CS229 - Machine Learning:** online, audited
- **Natural Language Processing Specialization:** Coursera

## TECHNICAL SKILLS

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- **Programming Languages:** Python, Java, C, PHP, JavaScript
- **Machine Learning Libraries:** PyTorch, Tensorflow Keras, Transformers, Numpy, Pandas, scikit-learn, ...
- **Web Development & Database:** HTML/CSS, jQuery, Bootstrap, MySQL, PostgreSQL, SQL Server, ...
- **Miscellaneous:** Microsoft office, Power BI, Docker, Git, Linux

## LANGUAGES

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**Persian:** native      **English:** proficient      **Spanish:** low proficiency      **Turkish:** low proficiency