Pouya Pezeshkpour

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https://pouyapez.github.io

Education

2015 – Present — **Ph.D., Electrical Engineering/Machine Learning**, University of California, Irvine, Advised by Prof. Sameer Singh.
M.Sc. in Electrical Engineering/Machine Learning.

2010 – 2015 — **B.Sc., Electrical Engineering**, Sharif University of Technology, Tehran, Iran.
Minor in Pure Mathematics.

Internships

Summer 2021 — **Research Intern, Semantic Machines at Microsoft Research**.
Supervisor: Prof. Benjamin Van Durme.
"Active Dialogue Simulation in Conversational Systems Using GPT-3", actively guiding dialogue generation using GPT-3 to populate low-resource domain data for training conversational systems.

Summer 2020 — **Research Intern, Siri Knowledge Group at Apple**.
Supervisor: Xiao Ling.
"Adversarial Augmentation for Query Understanding", improving robustness and performance of Siri question answering system through creating adversarial samples.

Summer 2019 — **Research Intern, Allen Institute for AI**.
Supervisor: Prof. Doug Downey.
"Question Generation and Targeting for Assisted Flashcard Study of Scientific Papers", providing a personalize memory assistant technology by designing an automatic question generation model and active spaced repetition algorithm.

Summer 2018 — **Research Intern, Fujitsu Laboratories of America**.
Supervisor: Ramya Srinivasan.
"Generating User-Friendly Explanations", generating a user-friendly explanation for models' prediction over loan denial application.

Summer 2014 — **Research Intern, The Chinese University of Hong Kong**.
Supervisor: Prof. Chandra Nair.
"Hypercontractivity Calculations for the Binary Symmetric Case".

Research Interests

Knowledge Graphs — Completion, Interpretability, Adversarial Attacks, and Classification.
NLP — Interpretability, Adversarial Attacks, Question Answering, and Text Generation.
Vision — Interpretability, Active Learning, and Few-Shot Learning.

Honors and Awards

- NEC Laboratories Student Research Fellowship 2021-2022 (80,000 $).
- Best Paper Runners Up at AKBC 2020.
- AWS Research Award 2019-2020 (2,500 $).
- Henry Samueli Fellowship, University of California, Irvine, 2015-2016.
- Member of "Society for Exceptional Talents" at Sharif University of Technology.

Research Publications

Journal Articles

1. **Pezeshkpour**, **P.**, Jain, S., Singh, S., & Wallace, B. (2021). *"Combining Feature and Instance Attribution to Detect Artifacts"*. Submitted to Transactions of the Association for Computational Linguistics (TACL).
2. Chan, Y., **Pezeshkpour**, **P.**, Geng, C., & Jafar, S. A. (2021). *"An Extremal Network Theory for the Gain of Optimal Power Control over Scheduling"*. Submitted to IEEE Transactions on Wireless Communications.
3. Khashabi, D., Cohan, A., Shakeri, S., Hosseini, P., **Pezeshkpour**, **P.** et al. (2021). *"ParsiNLU: A Suite of Language Understanding Challenges for Persian"*. Transactions of the Association for Computational Linguistics (TACL).

Conference Proceedings

1. **Pezeshkpour**, **P.**, Subhro, R., Chen, C., Shin, R., & Van Durme, B. (2022). *"Active Dialogue Simulation in Conversational Systems Using GPT-3"*, To be Submitted to proceedings of the 2022 Conference of the North American Chapter of the Association for Computational Linguistics (NAACL).
2. **Pezeshkpour**, **P.**, Jain, S., Wallace, B., & Singh, S. (2021). *"An Empirical Comparison of Instance Attribution Methods for NLP"*, Proceedings of the 2021 Conference of the North American Chapter of the Association for Computational Linguistics (NAACL).
3. **Pezeshkpour**, **P.**, Tian, Y., & Singh, S. (2020). *"Revisiting evaluation of knowledge base completion models"*, Automated Knowledge Base Construction (AKBC). (nominated for best paper award).
4. **Pezeshkpour**, **P.**, Tian, Y., & Singh, S. (2019a). *"Investigating Robustness and Interpretability of Link Prediction via Adversarial Modifications"*, Proceedings of the 2019 Conference of the North American Chapter of the Association for Computational Linguistics (NAACL).
5. **Pezeshkpour**, **P.**, Chen, L., & Singh, S. (2018). *"Embedding Multimodal Relational Data for Knowledge Base Completion"*, Proceedings of the 2018 Conference on Empirical Methods in Natural Language Processing (EMNLP).
6. **Pezeshkpour**, **P.**, & Behroozi, H. (2014). *"Optimal tradeoff between source and state distortions over a Gaussian channel using single and hybrid digital analog codes"*. IEEE, 7'th International Symposium on Telecommunications (IST).

Workshop and Symposia

1. **Pezeshkpour**, **P.**, Zhao, Z., & Singh, S. (2020a). *"On the Utility of Active Instance Selection for Few-Shot Learning"*. NeurIPS Workshop on Human, Model in the Loop Evaluation, and Training Strategies (HAMLETS).
2. **Pezeshkpour**, **P.**, Zhao, Z., & Singh, S. (2020b). *"Using Data Importance for Effective Active Learning"*. CVPR workshop on Visual Learning with Limited Labels (VL3).
3. **Pezeshkpour**, **P.**, Tian, Y., & Singh, S. (2019b). *"Integrating Local Structure into Knowledge Graph Embeddings"*. SoCal NLP Symposium.
4. Srinivasan, R., Chander, A., & **Pezeshkpour**, **P.** (2018). *"Generating user-friendly explanations for loan denials using GANs"*. NeurIPS Workshop on Challenges and Opportunities for AI in Financial Services.
5. **Pezeshkpour**, **P.**, Guestrin, C., & Singh, S. (2017). *"Compact factorization of matrices using generalized round-rank"*. Southern California Machine Learning Symposium.

Patents

1. **Pezeshkpour**, **P.**, Malur Srinivasan, R., & Chander, A. (2020a). *User-Friendly Explanation Production Using Generative Adversarial Networks"*. US Patent App. 16/278,604.
2. **Pezeshkpour**, **P.**, Malur Srinivasan, R., & Chander, A. (2020b). *"Explanations Generation with Different Cognitive Values Using Generative Adversarial Networks"*. US Patent App. 16/278,609.

Professional Experience

Workshop Organizing

- 2021 Co-organized Explainable Graph-Based Machine Learning workshop at AKBC
- 2020 Co-organized Knowledge Bases and Multiple Modalities workshop at AKBC
- 2019 Co-organized Knowledge Bases and Multiple Modalities workshop at AKBC

Review Service

- 2021 Reviewer at NeurIPS, NAACL.
- 2020 Reviewer at NeurIPS, ICLR, AAAI, EMNLP.
- 2019 Reviewer at NeurIPS, ICLR, EMNLP.
- 2018 Reviewer at EMNLP.

Relevant Courses

- Machine Learning, Natural Language Processing, Neural Networks, Probabilistic Learning, Information Theory, Random Processes, Linear Algebra, and Convex Optimization.

Skills

- Coding: Python (Primary), Matlab.
- Frameworks: Pytorch (Primary), Keras, Tensorflow, Scikit-Learn, AllenNLP.