Neeraj Varshney

Ph.D. Student (4^{th} Year)
Computer Science (NLP/NLU)
Arizona State University

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Research Interests

Efficient & Reliable NLU Systems
Open-Domain QA
Selective Prediction
Learning from Less Supervision
Multi-task Learning
Generalization
Reasoning
Learning from NL Instructions
Robustness

Collaborators

Chitta Baral (ASU)
Swaroop Mishra (ASU)
Pratyay Banerjee (ASU)
Tejas Gokhale (ASU)
Man Luo (ASU)
Arindam Mitra (Microsoft Research)
Daniel Khashabi (Allen AI)
Ashwin Kalyan (Allen AI)
Peter Clark (Allen AI)
Yizhong Wang (Allen AI)
Rik Koncel-Kedziorski (Alexa AI)

Coursework

Natural Language Processing
Statistical Machine Learning
Artificial Intelligence
NLP Methods in BioMedical
Knowledge Representation
Data Mining
Social Media Mining
Mobile Computing

Technical Skills

PyTorch, Transformers
Pytorch-lightning
Spacy, Huggingface
Data Analysis, Pandas, NumPy
Git, Mechanical Turk
Matplotlib, NLTK, word2vec

OTHERS

- Published 15+ ML/NLP articles on medium with $60,000^{+}$ views.
- Worked with Dr. Ayush Choure and Dr. Prateek Jain (MSR, India).
- Campus Coordinator of Computer Science Association at BITS Pilani and organized 6^{th} edition of Alumni Research Talks event.

Selected Publications

- **Unsupervised Natural Language Inference Using PHL Triplet Generation** *ACL, 2022*
- **Can Open-Domain QA Reader Make Efficient Use of External Knowledge like Humans?** *KnowledgeNLP, AAAI, 2023*
- **Efficient Indexing of External Knowledge for Open-Domain QA** *Ongoing*
- **Investigating Selective Prediction Approaches Across Several Tasks in IID, OOD, and Adversarial Settings** *ACL, 2022*
- **ILDAE: Instance-Level Difficulty Analysis of Evaluation Data** *ACL, 2022*
- **NumGLUE: A Suite of Mathematical Reasoning Tasks** *ACL, 2022*
- **Towards Improving Selective Prediction Ability of NLP Systems** *RepL4NLP, ACL, 2022*
- **Let the Model Decide its Curriculum for Multitask Learning** *DeepLo, NAACL, 2022*
- **Model Cascading: Towards Jointly Improving Inference Efficiency and Accuracy of NLP Systems** *EMNLP, 2022*
- **On Reliably Re-Attempting the Unanswered Instances of the Selective Prediction System** *Under Review@EACL*
- **Benchmarking Generalization via In-Context Instructions on 1,600+ Language Tasks** *EMNLP, 2022*
- **On Evaluating State-of-the-art NLP Models' Understanding of Feasibility** *Under Review@EACL*
- **An Architecture for Novelty Handling in a Multi-Agent Stochastic Environment: Case Study in Open-World Monopoly** *AAAI Sym. 2022*

Work Experience

Amazon Science *May 2022 - Aug 2022* **Applied Scientist Intern**
- Alexa AI - Web Question Answering

Microsoft *Jan 2018 - July 2019* **Software Developer**
- Contributed towards development of a Machine Learning driven chat recommendation system aimed at augmenting user engagement with Microsoft 'Teams'.
- Collaborated with MSR researchers for a feature titled 'Intelligent Feeds' that finds relevant messages for users based on their prior activities and message text features.

Education

Arizona State University *2019 - 2024 Expected* **Ph.D. in Computer Science**
- **Advisor** : Dr. Chitta Baral
- **CPGA** : 4/4
- **Awards** : GPSA Award (2 times), Graduate College Award (3 times), SCAI conference award (2 times), ACL 2022 registration award from Repl4NLP.

BITS Pilani, Pilani Campus, India *2014- 2018* **B.E (Hons) Computer Science**
- **CGPA** : 9.11/10
- **Experience** : 'Web Intelligence & Social Computing' research lab under Prof. Poonam Goyal, CEERI research lab under Dr. J.L. Raheja.
- **Internships** : Microsoft, Samsung R&D Institute, Valuefirst Digital Media.