Neeraj Varshney

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

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Research Interests

Efficient & Reliable NLU Models
Question Answering
Selective Prediction
Open-Domain QA
Learning for 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)
Daniel Khashabi (Allen AI)
Ashwin Kalyan (Allen AI)
Peter Clark (Allen AI)
Yizhong Wang (Allen AI)
Rik Koncel-Kedziorski (Amazon)
Alessandro Moschitti (Amazon)

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*
- **Use 'it' When You Need 'it': Towards Efficient Use of External Knowledge in Open-Domain QA Reader** *ARR, Sep 2022*
- **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** *ACL, RepL4NLP 2022*
- **Let the Model Decide its Curriculum for Multitask Learning** *NAACL, DeepLo 2022*
- **[In Review@EMNLP, 2022] On Improving Inference Efficiency of NLP Systems Without Sacrificing the Prediction Accuracy** *Reviews: 4, 4, 4, 2.5*
- **[In Review@EMNLP, 2022] On Reliably Re-Attempting the Unanswered Instances of a Selective Prediction System** *Reviews: 3.5, 3.5, 2.5*
- **[In Review@EMNLP, 2022] Benchmarking Generalization via In-Context Instructions on 1,600+ Language Tasks** *Reviews: 4, 4, 3.5*
- **[In Review@EMNLP, 2022] On Evaluating NLP Models' Understanding of Feasibility** *Reviews: 4, 3, 2.5*
- **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 Information team

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** : Spring 2022 ASU GPSA Travel Award, Graduate College Travel Award (Q1 & Q4), SCAI conference award, 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.