Manish Shetty M

Research Fellow, Microsoft Research India
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Education

- **PES University, Bangalore** *Aug'16 – May'20*
  B.Tech in Computer Science and Engineering (*Honors*) — *Specialization in Data Science*
  Cum. GPA: **9.51**/10
  Dr. MRD Merit Scholarship & **Prof CNR Rao Scholarship** (top 2%) for academic performance.

Work Experience

- **Microsoft Research, Bangalore, India** *July'20 – Present*
  Research Fellow
  Advisor: Chetan Bansal, Dr. Nachiappan Nagappan, and Dr. Thomas Zimmermann
  Topics - Machine Learning, NLP, Information Extraction, Meta-Learning, ML4SE, AIOps

- **Microsoft Research, Bangalore, India** *Jan'20 – June'20*
  Research Intern
  Advisor: Chetan Bansal, Dr. Nachiappan Nagappan, and Dr. Thomas Zimmermann
  Topics - Machine Learning for Software Engineering, Deep Learning, Multi-Task Learning

- **Deloitte Touche Tohmatsu LLC, Bangalore, India** *June'19 – Aug'19*
  ML Research Intern
  Advisor: Dr. Vikram Venkateshwaran
  Topics - Machine Learning, Unsupervised Learning, Security

Academic Service

› **Shadow Program Committee** *Mining Software Repositories* [MSR'21]

› **Reviewer** *Journal of Software Engineering Research and Development* [JSERD]

Publications

A Machine Learning Understanding of Sepsis
Manish Shetty, V. Menon, P. Athri, G. Srinivasa
Preprint (5 pages) [Under Submission]

SoftNER: Mining Knowledge Graphs From Cloud Incidents
Manish Shetty, C. Bansal, S. Kumar, N. Rao, N. Nagappan
Preprint (15 pages) [Under Submission]

Neural Knowledge Extraction from Cloud Service Incidents
Manish Shetty, C. Bansal, S. Kumar, N. Rao, N. Nagappan and T. Zimmermann
43^{rd} *International Conference on Software Engineering - SEIP, 2021* (12 pages) [ICSE'21]
Acceptance Rate ≈ **34%** | Featured in ***VentureBeat***
Nominated for the IEEE Software Distinguished Paper Award

Exploration and Comparison of Modern AI Algorithms to Predict Drug Efficacy
Manish Shetty, A. Kasi, R. Neil, V. Murali, P. Athri, G. Srinivasa
IEEE 6^{th} *International Conference on Electronics, Computing and Communication Technologies* [CONECCT'20]

* – equal contributions

Patents

- **Automatic Recognition of Entities Related to Cloud Incidents** filed with the USPTO *June 19, 2020*
  Manish Shetty, Chetan Bansal, Sumit Kumar, Nikitha Rao, Nachiappan Nagappan, and Thomas Zimmermann
- **Automation of Troubleshooting Guides using Meta-Learning** filed with the USPTO *April 24, 2021*
  Manish Shetty, Chetan Bansal, Puneet Kapoor, Tarun Sharma, Rahul Mittal, and Abhilekh Malhotra

Research Experience

- **Meta-Learning for Few-Shot Command Extraction** *Nov'20 – Present*
  Advisors: Chetan Bansal, *Microsoft Research*
  - Formulated the the command extraction problem as a multi-class sentence classification task.
  - Working on using a meta-learning approach to learn to classify from few weakly labeled examples.
- **SoftNER: Mining Knowledge Graphs From Cloud Incidents** *Dec'20 – Feb'20*
  Advisors: Chetan Bansal, *Microsoft Research*
  - Extended *Soft*NER by mined **binary entity relations** and scoring them using **normalized PMI**.
  - Used entities and relations to construct an incident **knowledge-graph**.
  - Used a combination of **clustering** and a novel **path based score** to identify entity-incident relevance.
  - Under submission at *Empirical Software Engineering* journal
- **Neural Knowledge Extraction from Cloud Service Incidents** *Jan'20 – Aug'20*
  Advisors: Chetan Bansal, Dr. Nachiappan Nagappan, and Dr. Thomas Zimmermann, *Microsoft Research*
  - Designed & built ***Soft*NER**– a framework for weak-supervised knowledge extraction from service incident reports.
  - Framed the problem as a domain agnostic and extensible **named-entity recognition** task.
  - Proposed a **Multi-task Bi-LSTM-CRF** model with attention mechanism.
  - *Soft*NER is now integrated into Microsoft IcM system and has enriched over 9K+ incidents.
  - This work was accepted at ***ICSE 2021*** (Acceptance Rate ≈ 34%) and featured on ***VentureBeat***.
- **A Machine Learning Understanding of Sepsis** *Jan'20 – Jun'20*
  Advisors: Dr. Gowri Srinivasa, *PES University*
  - Proposed an approach to predict two outcomes in sepsis patients - **Sepsis Severity** and **Comorbidity Severity**.
  - Used **local interpretable model-agnostic explanations** and other methods to analyze models.
  - Harmonized consistencies/contradictions about Sepsis, between expert human knowledge and that of a model.
  - Under submission at *Engineering in Medicine and Biology Society*
- **Exploration and Comparison of Modern AI Algorithms to Predict Drug Efficacy** *Sept'19 – Feb'20*
  Advisors: Dr. Gowri Srinivasa, *PES University*
  - Worked on improving the critic in **ReLeaSE - Reinforcement learning framework for de-novo drug design**.
  - Improved learning using path-context based encoding and data-augmentation for canonical SMILES.
  - Showed simpler classifiers like random-forest can be better critics than the original LSTM in ReLeaSE.
  - This work was accepted at ***IEEE CONNECT 2020***.
- **Denoising and Segmentation of Epigraphs** *Sept'18 – May'19*
  Advisors: Dr. Mamatha H R, *PES University*
  - Proposed algorithms utilizing noise templates to denoising engraved inscriptions.
  - Work on fixed prior noise template-matching was published in ***Springer's AISC 2020***.
  - Work on inferring noise as a factor of character area was published in ***Elsevier's PCS 2020***.

Relevant Courses

Deep Learning • Machine Learning + Practicum • Natural Language Processing • Linear Algebra • Research Methodology • Introduction to Data Science • Data Analytics • Discrete Mathematics and Logic • Algorithms + Practicum • Advanced Algorithms • Engineering Mathematics I • Engineering Mathematics II