Manish Shetty M

Research Fellow, Microsoft Research India

@ manish.shetty.m@outlook.com

⌂ https://manishshettym.github.io

 github.com/manishshettym

 Google Scholar

Education

PES University, Bangalore   *Aug'16 – May'20*
B.Tech in Computer Science and Engineering (*Honors*) | *Specialization in Data Science*

Cum. GPA: **9.51**/10.0 (3.98/4.0)
6X recipient of **Prof CNR Rao Scholarship**, Computer Science, PES University 🏆
1X recipient of **Dr. MRD Merit Scholarship**, Computer Science, PES University 🏆

Work Experience

Microsoft Research, Bangalore, India   *July'20 – Present*
Research Fellow
Domains: Software Engineering, Machine Learning, Systems
Advisors: Chetan Bansal, Dr. Suman Nath, Dr. Thomas Zimmermann, Dr. Nachiappan Nagappan

Microsoft Research, Bangalore, India   *Jan'20 – June'20*
Research Intern
Domains: Software Engineering, Machine Learning, NLP
Advisors: Chetan Bansal, Dr. Nachiappan Nagappan, Dr. Thomas Zimmermann

Deloitte Touche Tohmatsu LLC, Bangalore, India   *June'19 – Aug'19*
ML Research Intern
Domains: Cyber Security, Data Science, Machine Learning
Advisor: Dr. Vikram Venkateshwaran

Publications

Large-scale Crash Localization using Multi-Task Learning [preprint]   [Under Review]
Manish Shetty, C. Bansal, S. Nath, S. Bowles, H. Wang, O. Arman, S. Ahari
Preprint (12 pages)

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

Neural Knowledge Extraction from Cloud Service Incidents [pdf] [talk]   [ICSE 2021]
Manish Shetty, C. Bansal, S. Kumar, N. Rao, N. Nagappan and T. Zimmermann
43rd International Conference on Software Engineering - SEIP, 2021 (12 pages)
Acceptance Rate ≈ **33.8%** (41/121)
Nominated for the IEEE Software Distinguished Paper Award (5/41) 🏆
Featured in VentureBeat: "Microsoft's SoftNER AI uses unsupervised learning to help triage cloud service outages" 🏆

A Machine Learning Understanding of Sepsis [pdf]   [EMBC 2021]
Manish Shetty, V. Menon, P. Athri, G. Srinivasa
43rd International Conference of the IEEE Engineering in Medicine and Biology Society (5 pages)

Exploration and Comparison of Modern AI Algorithms to Predict Drug Efficacy [pdf]   [CONECCT 2020]
Manish Shetty, A. Kasi, R. Neil, V. Murali, P. Athri, G. Srinivasa
6th IEEE International Conference on Electronics, Computing and Communication Technologies, 2020 (5 pages)

Academic Service

> **Reviewer Mentee [invited]**   *International Conference on Learning Representations 2022* [ICLR'22]

> **Shadow Program Committee** 🔗   *Mining Software Repositories Conference 2021* [MSR'21]

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

Patents

1. **Automatic Recognition of Entities Related to Cloud Incidents** *(USPTO) June 19, 2020*
2. **Automation of Troubleshooting Guides using Meta-Learning** *(USPTO) June 28, 2021*
3. **Performing Quality-Based Action(s) Regarding Engineer-Generated Documentation Associated with Code and/or Application Programming Interface** *(USPTO) Aug 26, 2021*
4. **Crash Localization using Crash Frame Sequence Labeling** *(USPTO) Sep 24, 2021*

Research Experience

- **Learning to Localize Crashes at Scale** *Feb'21 – present*
  Advisors: Chetan Bansal, Dr. Suman Nath, *Microsoft Research*
  › Designed and developed *DeepAnalyze* - a deep learning based solution to localize crashing faults from crash stacks.
  › Empirically analyzed the complexity and heterogeneity of large-scale crashes.
  › Conceptualized a **novel sequence labeling formulation** utilizing both semantic and context stack information.
  › Showed the effectiveness of **transfer learning** to build models for **cross-application** scenarios with minimal data.
  › Working on deploying an online-learning pipeline for continuously improving DeepAnalyze in the wild.
  › Working on creating a library of tools for related tasks like faulty thread localization, problem bucetization, etc.
  › This work is *Under Review.*

- **Mining Knowledge Graphs From Cloud Incidents** *Dec'20 – Feb'21*
  Advisors: Chetan Bansal, *Microsoft Research*
  › Extended *Soft*NER by mining **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.
  › This work is *Under Review*

- **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 **type-aware Multi-task neural architecture** for knowledge extraction.
  › *Soft*NER is now integrated into Microsoft's IcM system and has enriched over 9K+ incidents.
  › This work was accepted at *ICSE 2021* 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.
  › This work was accepted at *IEEE EMBC 2021*.

- **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.
  › 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 [pdf]*.
  › Work on inferring noise as a factor of character area was published in *Elsevier's PCS 2020 [pdf]*.

References

› Chetan Bansal — Principal Research SDE, Microsoft Research, Redmond [🌐]
› Dr. Nachiappan Nagappan — *IEEE & ACM Fellow*, Software Engineer, Facebook, Redmond [🌐]
› Dr. Thomas Zimmermann — *IEEE Fellow*, Sr. Principal Researcher, Microsoft Research, Redmond [🌐]
› Dr. Suman Nath — Partner Research Manager, Microsoft Research, Redmond [🌐]
› Dr. Gowri Srinivasa — Professor, PES University, Bangalore [🌐]

last updated on September 30, 2021