RAHUL KRISHNA

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EDUCATION

PhD in Computer Science — Jun. 2015 – Dec. 2018 (expected)
North Carolina State University — *Raleigh, NC*

MS in Electrical Engineering — Aug. 2013 – May 2015
North Carolina State University — *Raleigh, NC*

BE in Electronics & Communication — Aug. 2009 – May 2013
Ramaiah Institute Of Technology — *Bengaluru, India*

TECHNICAL SKILLS

General Expertise: Machine Learning, Natural Language Processing, Multiobjective Optimization, Empirical Software Engineering;
Data Analytics: Spark, Hadoop, Elasticsearch, Jena, S3, Weka, Sklearn, JMetal. Visualization: Kibana, D3JS, Matplotlib;
Cloud Computing: AWS ecosystem: EMR, Apache Livy, Cloud Formation, AWS Lambda, Chalice;
Programming: Proficient: Python, Java, & R. Also familiar with: Javascript, Scala, C++, & Go;
DevOps: Ansible, Vagrant, Travis, Jenkins, Docker.

WORK EXPERIENCE

Research Intern — June 2018 – Aug. 2018
Phase Change Software — *Golden, CO*

- Designed a Natural Language framework to automatically extract domain knowledge and business rules from legacy code.
- Developed an ontology based vector embedding model to annotate and enrich COBOL slices with domain knowledge.

Data Science Intern — May '16 – Aug '16 & May '17 – Aug '17
LexisNexis — *Raleigh, NC*

- Designed a sandbox app for e-discovery. Sandbox was used to improve the classification accuracy of SVM by $\approx$ 20%.
- Worked on deploying computational linguistics and machine learning algorithms for processing 1M+ legal documents.
- Contributions include: (1) Improving text classification accuracy of SVM by modifying support vectors with active learning and feedback from human-in-loop. (2) Developing text summarization tools using doc2vec to generate legal "headnotes";

SELECTED RESEARCH PROJECTS

Planning in Software Engineering — Sept 2015 - Present
NSF funded project in the RAISE Lab — *Raleigh, NC*

- Developed a novel planning algorithm called XTREE to assist developers in software maintenance and defect reduction.
- Experiments showed that XTREE can generate succinct and effective plans.
- Experiments showed that XTREE can reduce defects by more than 80% in several cases.

Transfer Learning in Software Engineering — Sept 2015 - Present
NSF funded project in the RAISE Lab — *Raleigh, NC*

- Demonstrated the existence of a *"Bellwether Effect"* in several domains within software engineering.
- The *bellwether* projects were shown to (1) be very effective for transfer learning, (2) be more effective than state-of-the-art transfer learners, and (3) enable several projects to learn useful lesson form one *"bellwether"* project.

Validating Industrial Text Mining — Sept 2015 - May 2017
Industrial collaboration with LexisNexis — *Raleigh, NC*

- Worked on validating large scale natural language processing pipelines for technology assisted review at LexisNexis.
- Demonstrated the usefulness of context specific ensemble learners and active learning for document classification.
- Demonstrated the effectiveness of several data preprocessing techniques such SMOTE for enhancing information retrieval.

SELECTED PUBLICATIONS

[1] Krishna, R. & Menzies, T.. *"Bellwethers: A Baseline Method For Transfer Learning"*. In **IEEE Transactions on Software Engineering, 2018**. Preprint: arXiv:1703.06218;

[2] Krishna, R., Menzies, T., & Layman, L. *"Less is more: Minimizing code reorganization using XTREE"*. In **Information and Software Technology, 2017**. DOI: 10.1016/j.infsof.2017.03.012;

[3] Krishna, R., Menzies, T., & Fu, W. *"Too much automation? The Bellwether Effect and its Implications for Transfer Learning."* **31st Intl. Conference on Automated Software Engineering, Sept. 2016**. DOI: 10.1145/2970276.2970339;

[4] Krishna, R., Agrawal, A., Rahman, A., Sobran, A., & Menzies, T. *"What is the Connection Between Issues, Bugs, and Enhancements? (Lessons Learned from 800+ Software Projects)"*. **ICSE 2018 SEIP**. Pre: arXiv:1710.08736;

[5] Chen, J., Nair, V., Krishna, R., & Menzies, T. *"Sampling as a Baseline Optimizer for Search-based Software Engineering"*. In **IEEE Transactions on Software Engineering, 2018**. Preprint: arXiv:1608.07617;

[6] Chen, D., Fu, W., Krishna, R., & Menzies, T. *"Applications of psychological science for actionable analytics"*. **FSE 2018**. (accepted) Available: arXiv:1803.05067;

[7] Agrawal, A., Krishna, R., Rahman, A., Sobran, A., & Menzies, T. *"We Don't Need Another Hero? The Impact of 'Heroes' on Software Development"*. **ICSE 2018 SEIP**. Pre: arXiv:1710.09055;