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, S3, Weka, Sklearn, JMetal. Visualization: Kibana, D3JS, Matplotlib;
Cloud Computing: AWS ecosystem: EMR, Apache Livy, Cloud Formation, AWS Lambda, Chalice;
Programming: Proficient: Python, Javascript, & R. Also familiar with: Java, Scala, C++, & Lua;
DevOps: Ansible, Vagrant, Travis, Jenkins, Docker.

WORK EXPERIENCE

Data Science Intern — May 2017 - Aug. 2017
LexisNexis — *Raleigh, NC*

- Worked on deploying computational linguistics and machine learning algorithms for processing 1M+ legal documents.
- Contributions include: (1) Clustering more than 1 million documents based word2vec and doc2vec to identify representatives for specific legal topics; (2) Developing automated text tools to summarize very large legal documents into legal "headnotes";

Software Engineering Intern — May 2016 - Aug. 2016
LexisNexis — *Raleigh, NC*

- Designed a sandbox app for e-discovery. Sandbox was used to improve the classification accuracy of SVM by $\approx$ 20%.
- Contributions: (1) Translating internal mechanisms of SVM into human comprehensible format; (2) Improved text classification accuracy of SVM by modifying support vectors using active learning and feedback from human-in-loop.

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 refactoring and code reorganization.
- 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 *bellwethers* were shown to be a very effective baseline for transfer learning. Also showed that they are very easy to discover and usually outperform several state-of-the-art transfer learners in software engineering.

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

[2] 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;

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

[4] 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;

[5] Krishna, R. *"Learning effective changes for software projects"*. **ACM Transactions on Software Engineering and Methodology, 2018**. (pending revisions) Available: arXiv:1708.05442;

[6] 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;

[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;