

# RAHUL KRISHNA

http://rkrsn.us ◊ Github: github.com/rahlk  
119 Karen Ct, Cary, NC 27511

Email : rkrish11@ncsu.edu  
Mobile : +1-919-396-4143  
LinkedIn: linkedin.com/in/rkrsn

## EDUCATION

### PhD in Computer Science

North Carolina State University

Jun. 2015 – Dec. 2018 (expected)

Raleigh, NC

### MS in Electrical Engineering

North Carolina State University

Aug. 2013 – May 2015

Raleigh, NC

### BE in Electronics & Communication

Ramaiah Institute Of Technology

Aug. 2009 – May 2013

Bengaluru, India

## TECHNICAL SKILLS

**General Expertise:** Empirical Software Engineering, Machine Learning, NLP, Multiobjective Optimization, Distributed Computing, DevOps;

**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, etc.

## SELECTED RESEARCH PROJECTS

### Planning in Software Engineering

NSF funded project in the RAISE Lab

Sept 2015 - Present

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

NSF funded project in the RAISE Lab

Sept 2015 - Present

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

Industrial collaboration with LexisNexis

Sept 2015 - May 2017

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.

## WORK EXPERIENCE

### Data Science Intern

LexisNexis

May 2017 - Aug. 2017

Raleigh, NC

- Worked on deploying computational linguistics and ML algorithms for processing millions of legal documents.
- Contributions include: (1) Clustering more than 1 million documents based word2vec and doc2vec to identify representatives for specific legal topics; (2) Developing tools for automated text summarization of very large legal documents;

### Software Engineering Intern

LexisNexis

May 2016 - Aug. 2016

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 PUBLICATIONS

- [1] Krishna, R., Menzies, T., & Layman, L. “Less is more: Minimizing code reorganization using XTREE”. In **Information and Software Technology**, Volume 88, 2017, Pages 53-66. 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** (pending revision), 2017. 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** (to appear), 2017. Preprint: arXiv:1608.07617;
- [5] Krishna, R. “Learning effective changes for software projects”. **32nd Intl. Conference on Automated Software Engineering Doctoral Symposium, October 2017**. Available: <http://dl.acm.org/citation.cfm?id=3155562.3155695>;
- [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)”. (Under review) **ICSE 2018 SEIP**. Pre: arXiv:1710.08736;
- [7] Rahman, A., Agrawal, A., Krishna, R., Sobran, A., & Menzies, T. “Continuous Integration: The Silver Bullet?”. (Under review) **ICSE 2018 SEIP**. Preprint: arXiv:1711.03933;