# Vivek Nair

(919) 523-9920 | www.vivekaxl.com | vivekaxl@gmail.com
1129 Crab Orchard Drive Apt. 1C, Raleigh, NC 27606

## EDUCATION

**North Carolina State University (NCSU),** Raleigh, NC, USA      May 2013 - Dec 2018 (expected)
Ph.D. Computer Science | Supervisor: Dr. Tim Menzies, Full Professor

**National Institute of Technology,** Durgapur, India      Aug 2009 - May 2011
M.Tech. Information Technology | Supervisor: Dr. Subhrabrata Choudhury, Associate Professor

**West Bengal University of Technology,** Kolkata, India      Aug 2005 - May 2009
B.Tech. Computer Science

## SKILLS AND INTERESTS

- Experience in Machine Learning (ML), Software Analytics.
- Proficient in *Python*, familiar with *Java, C, and ECL*; data analysis tools (Scikit-learn, SciPy, Pandas, jMetal, automl).
- Interested in backend/infrastructure development, ML, and research positions.

## PROFESSIONAL EXPERIENCES

### *Research Intern* | **Microsoft, Redmond, WA**
*Prediction Models for CloudTest Resource Allocation*      Summer 2018
- Optimized the performance (makespan) of Cloud Test, an internal tool used for testing software projects across Microsoft. The optimization strategy uses historical data to general models to predict an optimal schedule for the test jobs. The strategy saved 380 hours in 7 days (3%) and is currently the default scheduling strategy in CloudTest.

### *Software Engineering Intern* | **LexisNexis, Atlanta, GA**
*Enhanced ML Capabilities of HPCC (a big data cluster)*      Summer 2015, 2016
- Developed a FUSE plugin for HPCC to connect with Apache Spark. This plugin decreases data query time (up to 20%) as well as the overhead necessary to download the files to local machines.
- Implemented an automated testing suite for the ML library and ensured that the testing time was $< 24$ hours.
- Developed ML plugins for the Data Science Portal (an internal tool), which required massive refactoring of the codebase.
- One of the largest contributers to the Machine Learning codebase (addition).

### *Software Engineer* | **Samsung SEL, Noida, India**
*Developed file-system and memory solutions for low cost cellular phones*      Aug 2011 - Apr 2013
- Analyzed data from projects based on NOR Flash for Ultra Low-Cost cell phones, to reduce latency of applications. For example, reduced the boot time of the E1200 from 30 seconds to $< 10$ seconds.

## SELECTED PROJECTS

**Faster Discovery of Configuration Options of Software Systems**      May 2016 - Jan 2018
*Discover a configuration of an Apache Web Server which minimizes response time.*
- Used optimization and ML techniques to discover (near) optimal system configurations.
- Ran benchmarks to collect data over nine months and found performance metrics corresponding to configurations of the system under analysis.
- Spent one month analyzing data to build a model used for performance optimization.

**Sampling to discover optimal product configurations**      Jan 2015 - May 2016
*Select a product in product line (a monolithic codebase) such as cellphone to minimize cost, energy etc.*
- Explored various alternatives to expensive evolutionary searches by intelligent sampling.
- Approximated Principal Component Analysis to quickly prune the space of products.

## SELECTED PUBLICATIONS

- Chin-Jung Hsu, **Vivek Nair**, Vincent W. Freeh, Tim Menzies. *Micky: A Cheaper Alternative for Selecting Cloud Instances*. IEEE CLOUD 2018.
- Chin-Jung Hsu, **Vivek Nair**, Vincent W. Freeh, Tim Menzies. *Low-Level Augmented Bayesian Optimization for Finding the Best Cloud VM*. ICDCS 2018.
- **Vivek Nair**, Amritanshu Agrawal, Jianfeng Chen, Wei Fu, George Mathew, Tim Menzies, Leandro Minku, Markus Wagner, and Zhe Yu. *Data-Driven Search-based Software Engineering.* MSR 2018.
- Jianfeng Chen, **Vivek Nair**, Rahul Krishna, Tim Menzies. *"Sampling" as a Baseline Optimizer for Search-based Software Engineering*. IEEE TSE 2018.
- **Vivek Nair**, Zhe Yu, Tim Menzies, Norbert Seigmund, Sven Apel. *Finding Faster Configurations using FLASH*. 2017.
- **Vivek Nair**, Tim Menzies, Norbert Seigmund, Sven Apel. *Using Bad Learners to find Good Configurations* in FSE 2017.
- **Vivek Nair**, Tim Menzies, Norbert Seigmund, Sven Apel. *Faster Discovery of Faster System Configurations with Spectral Learning* in ASE Journal 2017.