

Vivek Nair

CONTACT INFORMATION

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EDUCATION

North Carolina State University Raleigh, NC
Ph.D. candidate in Computer Science May 2013 - Dec 2018 (Expected)
Advisor: Dr. Tim Menzies

National Institute of Technology, Durgapur Durgapur, India
M.Tech in Information Technology 2011
Advisor: Dr. Subhrabrata Choudhury, Associate Professor

West Bengal University of Technology Kolkata, West Bengal
B.Tech in Computer Science 2009

PROFESSIONAL EXPERIENCE

Microsoft Research Intern
Optimizing Distributed Testing Platform *May, 2018 - Aug, 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.
- Languages used: C#, Azure Kusto, Azure CosmosDB

LexisNexis - Risk Solutions Intern
Enhanced ML Capabilities of HPCC (a big data cluster) *June, 2015 - August, 2017*

- 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 contributors to the Machine Learning codebase (addition).
- Languages used: ECL, Python, Apache Spark, Apache Livy

Samsung Software Engineering Labs, India Software Engineer
Developed file-system and memory solutions for cellular phones *June 2011 - May 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.
- Languages used: C

SELECTED ACADEMIC PROJECTS

Faster Discovery of Configuration Options of Software System

- 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

- Explored various alternatives to expensive evolutionary searches by intelligent sampling.
- Approximated Principal Component Analysis to quickly prune the space of products.

SELECTED
PUBLICATIONS

- **Vivek Nair**, Rahul Krishna, Tim Menzies, and Pooyan Jamshidi. *Transfer Learning with Bellwethers to find Good Configurations*. (2018) Submitted
- **Vivek Nair**, Zhe Yu, Tim Menzies, Norbert Siegmund, and Sven Apel. *Finding faster configurations using FLASH*. (2018) Submitted
- Chin-Jung Hsu, **Vivek Nair**, Tim Menzies, and Vincent W. Freeh. *Scout: An Experienced Guide to Find the Best Cloud Configuration*. (2018) Submitted
- Chin-Jung Hsu, **Vivek Nair**, Vincent W. Freeh, Tim Menzies. *Micky: A Cheaper Alternative for Selecting Cloud Instances*. IEEE CLOUD (2018) → http://tiny.cc/vivek_2018e
- Chin-Jung Hsu, **Vivek Nair**, Vincent W. Freeh, Tim Menzies. *Low-Level Augmented Bayesian Optimization for Finding the Best Cloud VM*. ICDCS (2018) → http://tiny.cc/vivek_2018a
- **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). → http://tiny.cc/vivek_2018c
- Jianfeng Chen, **Vivek Nair**, Rahul Krishna, Tim Menzies. *“Sampling” as a Baseline Optimizer for Search-based Software Engineering*. IEEE TSE 2018. → http://tiny.cc/vivek_2016b
- Jianfeng Chen, **Vivek Nair**, Tim Menzies. *Beyond Evolutionary Algorithms for Search-based Software Engineering* in IST 2017. → http://tiny.cc/vivek_2017c
- **Vivek Nair**, Tim Menzies, Norbert Seigmund, Sven Apel. *Using Bad Learners to find Good Configurations* in FSE 2017. → http://tiny.cc/vivek_2017b
- **Vivek Nair**, Tim Menzies, Norbert Seigmund, Sven Apel. *Faster Discovery of Faster System Configurations with Spectral Learning* in ASE Journal 2017. → http://tiny.cc/vivek_2017a
- **Vivek Nair**, Tim Menzies, Jianfeng Chen. *“An (Accidental) Exploration of Alternatives to Evolutionary Algorithms for SBSE”* in SSBSE 2016. → http://tiny.cc/vivek_2016a

TECHNICAL SKILLS

- Language: Python (4+ years), C (6+ years), Java (2+ years), ECL (2 years), C# (3 months)
- Tools: scikit-learn, pandas, numpy, auto-ml
- OS: Linux, Windows
- Version Control: git, Perforce

HONORS AND
AWARDS

- Awarded for innovative use of HPC Systems, 2017
- Awarded the 2nd prize in HPC System Poster Competition, 2016.
- Awarded the Employee of the Month in January 2012 at Samsung Engineering Lab
- Awarded Scholarship by the HRD Ministry for pursuing M.Tech