

# Shrikanth Narayanaswamy Chandrasekaran<sup>1</sup>, Ph.D

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## PRINCIPAL INTERESTS

*Artificial Intelligence for Software Engineering*

*Current:* Exploring ways to prevent both large outages and minimize resolution effort post an outage with the help of historical data (machine learning models trained with disparate data sources).

*Past:* Software defect prediction (quality assurance) to ease software testing effort and costs. Software developer experience (productivity and satisfaction) for the enterprise cloud infrastructure. Identify factors that hinder enterprise software crowdsourcing.

*keywords: software quality, software analytics, developer experience.*

## ACADEMIC BACKGROUND

*Ph.D. Computer Science*

2017 - 2021

[North Carolina State University](#), Raleigh, NC, USA

- Ph.D. SE research in software defect prediction under the direction of Prof. [Tim Menzies](#). Dissertation title: Taming Confusions in Software Engineering (See #3).

*B.E Electronics & Communications Engineering*

2004 - 2008

[Saveetha Engineering College](#) (Affil. to Anna University), Chennai, India

- Focus areas: Supervisory control data acquisition

## EMPLOYMENT HISTORY

*Senior Member of Technical Staff*

2022 - present

[Oracle America Inc](#), Cary, NC, USA

- Propose and improve the developer experiences for the Oracle Cloud Infrastructure.
- Propose and build machine learning models to predict large-scale events (LSE) and minimize the triage effort of LSE.
- Participate in all phases of the software development life-cycle to build developer productivity (experience) enhancer tools for the Oracle Cloud Infrastructure.
- Interact with project managers, user-experience designers, domain engineers, and other cross-functional teams to overcome hurdles in building the tools.
- Enable software analytics support for the development tools to capture developer behavior, product usage, and pain points and envision future requirements.

[Product: OCI VSCode Toolkit \(click here\)](#)

*Research Intern*

Summer 2021

[Microsoft Corporation](#), Raleigh, NC, USA

- Identified factors that improve developer satisfaction ( Net Satisfaction score) across a large business unit within Microsoft.

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<sup>1</sup>My full name abbreviated as N.C. Shrikanth or Shrikanth N.C., ‘Shrikanth’ is my first name and ‘Narayanaswamy Chandrasekaran’ is my last name.

- Performed large-scale (100's of software repositories) data analysis on software engineers' feedback about their day-to-day work.
- Built machine learning oracles that offer actionable recommendations.

*Research Intern*

Summer 2020

[Fujitsu Research of America, Inc.](#), Raleigh, NC, USA

- Identified factors to improve deep learning-based code search models to support low code platforms.
- Ran an empirical study to gauge the performance of models (using CodeBERT & CodeSearchNet deep learning models) that catalyze developer productivity.

*Technology R&D Specialist*

2014 - 2017

[Accenture Labs](#), Bangalore, India

- Mentored both interns (for data science tasks) and software developers (for product development).
- Presented work regularly to leadership.
- Research Project #1: Crowdsourcing - Performed large scale data analysis to find obstacles for enterprises to crowdsource software development.
- Research Project #2: Log Analysis - Analyzed voluminous incident tickets and their associated log files of a supermarket chain to prescribe solutions to minimize incident resolution time.
- Research Project #3: Requirements Visualization - Built Eclipse IDE plugins for visual requirements and component reuse driven rapid application composition.

*Management Staff*

2011 - 2013

[ABB India Ltd.](#), Bangalore, India

- Project #1: Product Development - Managed the software life-cycle of a standalone Low voltage switchgear configuration and reporting product.
- Project #2: Trained a team of software engineers to transition their skills from .NET to Java-based technologies.

*Senior Software Engineer*

2008 - 2011

[Infosys Ltd.](#), Chennai, India

- Individual contributor for *Finmapper* from Finacle (a banking product) that helps manage complex business rules across numerous financial solutions.
- Single-handedly reverse-engineered an existing *Finmapper* to embed into a completely new software architecture (Eclipse IDE environment) to maximize code reuse and catalyze *Finmapper*'s time to market.

***Technical Skills***

- Programming: Java (SCJP and SCWCD certified) & Python. Fundamentals: Data Structures, Algorithms, Compilers, Object-oriented analysis, and design.
- Statistics: Hypotheses testing, effect size, analysis of distributions, etc.
- Machine Learning: Predictive/Estimate modeling, Weka data mining, scikit-learn, Deep learning (Tensorflow, CNN & RNN) Carrot2, ELK, and OPEN NLP.
- Visualization: Plotly, MATLAB, R, etc.
- Front-End: Java Swing, Eclipse Plugin development, and HTML-CSS. Database: RDBMS (MySQL & MariaDB) and Kusto (Microsoft).

- Distributed computing: Python multiprocessing on High-Performance computing systems.
- Operation Systems: Windows, Unix, and Linux.
- Methodologies: Waterfall, Agile, and Test-driven development (DevOps tools).  
 ★*Sun Certified Java Programmer*  
 ★*Sun Certified Web Component Developer*

## ★ SPECIAL ACHIEVEMENTS

*Academia:*

- Elevated to IEEE Senior Member (2022)
- Conference paper# 2 nominated for best paper candidate (the track acceptance rate  $\cong$  21%).

*Practice:*

- *Infosys Ltd* Finacle on the spot award for learning a niche skillset and integrating an entire product onto an IDE as a newbie.
- *ABB India Ltd* Star Employee for a quarter for meeting a short deadline
- *Accenture Labs*, Recognized for outstanding contributions (patents and publications).

## PROFESSIONAL ACTIVITIES

*Academia*

- PC member for MSR'23 [International Conference on Software Engineering](#)
- PC member for ICSE'22 Ph.D. Student Mentor [International Conference on Software Engineering](#)
- Reviewer for [Empirical Software Engineering Journal](#)
- Reviewer for [Information and Software Technology](#)

*Practice (Open-Source)*

- Demo with code: [Ok Eclipse - voice-enabled Eclipse IDE plugin](#).
- Blog: [Programatically refactor using eclipse](#).
- Blog: [Three Step Data-lite Machine Learning](#)
- (2022-), working closely with project managers, developers building the product, and developers using the product. Collect and analyze the opinions of developers, managers, and customers (developers) to identify factors that minimize software defects and maximize developer experience.

## TEACHING

*Academia*

- *Teaching assistant for graduate level CSC 510 Software Engineering 2018-2019* together with instructors [Dr. Jamie Jennings](#), [Dr. Nicholas A. Kraft](#), and [Dr. Emerson Murphy-Hill](#)
- *Teaching assistant for CSC 440 Database Management Systems* 2017-2018 together with instructor [Dr. Rada Chirkova](#)
- *Teaching assistant for CSC 495 Software Testing* 2018-2019 together with instructor [Dr. Kathryn T. Stolee](#)

*Practice*

- *Instructed (trained) a team of software engineers to transition their skills from .NET to Java-based technologies* 2012 at [ABB India Ltd.](#),

## PROFESSIONAL TALKS

1. [Data-lite Machine Learning](#). Research presentation at [SERI 2022-2023](#), Feb 2023
2. [Early Life Cycle Software Defect Prediction. Why? How?](#). Research track paper presentation at [ICSE](#), May 2021
3. [Assessing Practitioner Beliefs about Software Defect Prediction](#). Industry track paper presentation at [ICSE-SEIP](#), May 2020
4. [Trustworthiness in Enterprise Crowdsourcing: a Taxonomy and evidence from data.](#). Industry track paper presentation at [ICSE-SEIP](#), May 2016

## GRANTED PATENTS

See also [my google patents](#) page (Recently filed pending patents are not listed here).

1. #10,949,765 Automated inference of evidence from log information, 2021
2. #10,643,102 Incident prediction and prevention, 2020
3. # 10,606,450 Method and system for visual requirements and component reuse driven rapid application composition, 2020
4. # 10,592,398 Generating a test script execution order, 2020

## JOURNAL ARTICLES

See also [my google scholar](#) page.

1. **Shrikanth, N.C.**, Nichols, W., Fahid, F.M. and Menzies, T., 2021. Assessing practitioner beliefs about software engineering. *Empirical Software Engineering*, 26(4), pp.1-32. [Also accepted at ICSE-Journal First 2022]
2. **Shrikanth, N.C.** and Menzies, T., 2022. Assessing the Early Bird Heuristic (for Predicting Project Quality). *arXiv preprint arXiv:2105.11082*. TOSEM Accepted (2023)
3. **Shrikanth, N.C.**. Taming Confusions in Software Engineering. Diss. North Carolina State University, 2022.

## CONFERENCE Full-papers:

- ### CONTRIBUTIONS
1. **Shrikanth, N.C.**, Majumder, S. and Menzies, T., 2021, May. Early life cycle software defect prediction. why? how?. In 2021 IEEE/ACM 43rd International Conference on Software Engineering (ICSE) (pp. 448-459). IEEE. (*Mean research track acceptance rate  $\approx 20\%$* )
  2. **Shrikanth, N.C.** and Menzies, T., 2020, October. Assessing practitioner beliefs about software defect prediction. In 2020 IEEE/ACM 42nd International Conference on Software Engineering: Software Engineering in Practice (ICSE-SEIP) (pp. 182-190). IEEE. (★ *Best Paper Candidate, Acceptance rate:  $\approx 21\%$* )
  3. Dwarakanath, A., **Shrikanth, N.C.**, Abhinav, K. and Kass, A., 2016, May. Trustworthiness in enterprise crowdsourcing: a taxonomy & evidence from data. In Proceedings of the 38th International Conference on Software Engineering Companion (pp. 41-50).
  4. Dwarakanath, A., Chintala, U., **Shrikanth, N.C.**, Virdi, G., Kass, A., Chandran, A., Sengupta, S. and Paul, S., 2015, May. Crowd build: A methodology for enterprise software development using crowdsourcing. In 2015 IEEE/ACM 2nd International Workshop on CrowdSourcing in Software Engineering (pp. 8-14). IEEE.

Poster (short-papers):

1. **Shrikanth, N.C.** and Menzies, T., 2020, June. What disconnects practitioner belief and empirical evidence?. In Proceedings of the ACM/IEEE 42nd International Conference on Software Engineering: Companion Proceedings (pp. 286-287).
2. Abhinav, K., **Shrikanth, N.C.** and Dwarakanath, A., 2015. Simulation of Consensus Based Approaches to Mitigate the Challenges in Crowdsourcing. In QuASoQ/WAWSE/CMCE@ APSEC (pp. 49-51).

## ARTICLES IN PROGRESS

1. Bahrami, M., **Shrikanth, N.C.**, Mizobuchi, Y., Liu, L., Fukuyori, M., Chen, W.P. and Munakata, K., 2021. AugmentedCode: Examining the Effects of Natural Language Resources in Code Retrieval Models. arXiv preprint arXiv:2110.08512.
2. Bahrami, M., **Shrikanth, N.C.**, Ruangwan, S., Liu, L., Mizobuchi, Y., Fukuyori, M., Chen, W.P., Munakata, K. and Menzies, T., 2021. Pytorrent: A python library corpus for large-scale language models. arXiv preprint arXiv:2110.01710.