Nishant Sinha

+91 95 3550 0553
nishantsinha@acm.org

Computer Scientist
I am interested in creating reliable, distributed, interactive and
multimodal systems involving human computer symbiosis.

EXPERIENCE

IBM Research India, Bangalore — *Researcher*

Sept 2011 - PRESENT

Architect for an end-to-end cognitive system for performing
speech-based data analytics and visualization. Components include
speech-to-text, NLP, inferring structured features from web
artifacts and multi-screen data visualization. Built using web
technologies, low latency message-passing and NoSQL databases.

Identifying core programming abstractions required to get rid of
time consuming boilerplate code across the web stack. Developed
theory and algorithms for constraint based responsive UI design.

NEC Labs USA, Princeton — *Research Staff member*

Oct 2007 - Sept 2011

Automated bug-hunting for multi-threaded C/C++ programs using
the compiler stack, mathematical modeling and constraint solving.

EDUCATION

Carnegie Mellon University, Pittsburgh

Aug 2001 - Sept 2007

Ph.D. in Computer Engineering.

Topic: Learning abstractions for compositional analysis of systems.

Expertise in efficiently analyzing large state-spaces created by
executions of concurrent software systems, using mathematical
logic techniques and formal methods.

IIT Kharagpur, Kharagpur

Aug 1997 - May 2001

B. Tech (Hons.) in Computer Science and Engineering.

SKILLS

Solving tough problems in a
structured, divide-conquer fashion

Actively identifying and pursuing
problems where technology
solutions can have a deep impact

Understanding and picking up new
technologies

Rapid prototype building,
experimentation and evaluation

A broad, in-depth knowledge of
multiple aspects of computer
science

Expertise in writing and
communicating results

Mentoring students, colleagues
towards systematic thinking,
developing a problem-solving
taste, writing and presenting
results

AWARDS

Best Paper Award. Indian Software
Engineering Conference. 2015.

**Global Young Scientists Summit
Travel Award**, 2012.

ACM Distinguished Paper Award.
Conf. on Foundations of Software
Engineering. 2010.

Best Student Paper Award. SRC
Symposium. 2006.

A Multimodal, Distributed Cognitive System

Designing an intelligent cognitive system with high-bandwidth, speech/gesture based human-machine interaction to enable distributed analytics and data visualization for a team of analysts. Applications to Mergers & Acquisitions and Oil Field Analytics.

Simplifying Web Programming — Identifying the core abstractions needed for full-stack web programming

Automated Bug Hunting — Use mathematical models of C/C++/Java programs and constraint solving to find bugs

PUBLICATIONS

I have authored papers in reputed, top-tier international Computer Science conferences for more than 10 years now (citations: >800, h-index: 16). Have several (~10) patents granted by USPTO. I have worked on a variety of problem areas: formal methods, distributed systems, program verification, compiler design and constraint solving. Recent papers on web UI design, web programming models and formal models for data-parallel computation.

More details at http://ekshaks.github.io

TOOLS and FRAMEWORKS

Familiar with a variety of programming languages and tooling frameworks. My earlier projects were implemented using C/C++ and Java. These days I mostly work with JavaScript/node.js and Python. I've also used R and Go for small projects.

I've implemented reasonable sized, full-stack, systems using JavaScript-based web frameworks -- Meteor, Express together with MongoDB backend. In general, quite familiar with the evolving ecosystem of web.

I've worked with both R and Python libraries for small data analysis projects involving regression, clustering and decision trees. Also familiar with theory and internals of the the Spark platform.

Familiar with deep learning theory. Applied DNNs and RNNs to solve practical image/text analysis problems. Worked with various libraries -- Caffe, Keras, Torch, gensim.