

Prashant Pandey

ACADEMIC INTEREST	My interest lies in Systems and Algorithms and problem-solving. Expertise: Data Structures and Algorithms for Big-Data, File Systems and Security.
CONTACT INFORMATION	407 Stonegate Way Middle Island, NY - 11953 E-mail:ppandey@cs.stonybrook.edu E-mail:prashant.prashn@gmail.com Phone: (+1) 631-949-6948
EDUCATION	Stony Brook University , Stony Brook, NY <i>PhD, Computer Science</i> Expected Graduation: May 2018 <i>GPA (3.8/4.0)</i> Advisors: Michael Bender: https://www.cs.stonybrook.edu/people/faculty/MichaelBender Rob Johnson: https://www.cs.stonybrook.edu/people/faculty/RobJohnson University of Pune , Pune, India <i>Bachelor of Engineering, Information Technology</i> August 2007 - June 2011
RESEARCH PAPERS	Rainbowfish: A Succinct Colored de Bruijn Graph Representation <ul style="list-style-type: none">• Paper submitted to WABI 2017. A Fast x86 Implementation of Select <ul style="list-style-type: none">• Paper submitted to SEA 2017. Squeakr: An Exact and Approximate k-mer Counting System <ul style="list-style-type: none">• Paper submitted to BIOINFORMATICS. deBGR: An Efficient and Near-Exact Representation of the Weighted de Bruijn Graph <i>ISMB 2017</i> A General-Purpose Counting Filter: Making Every Bit Count <i>SIGMOD 2017</i> Optimizing Every Operation in a Write-Optimized File System <i>FAST 2016</i> <ul style="list-style-type: none">• Paper URL: https://www.usenix.org/system/files/conference/fast16/fast16-papers-yuan.pdf BetrFS: A Right-Optimized Write-Optimized File System <i>FAST 2015</i> <ul style="list-style-type: none">• Paper URL: https://www.usenix.org/system/files/conference/fast15/fast15-paper-jannen_william.pdf
RESEARCH PROJECTS	Cryptographic integrity for EXT4 @Google <i>Summer 2016</i> <ul style="list-style-type: none">• Implemented cryptographic integrity using AES-256-GCM in Ext4 file system.• Also, implemented an in-kernel authenticated skiplist data structure to store integrity metadata.• File system level integrity protection against offline attacks. Secure Cloud Stack using Intel SGX technology @Intel Labs <i>Summer 2014, 2015</i> <ul style="list-style-type: none">• Developed an encrypted FUSE file system using Intel SGX technology.• Successfully ported a Java Virtual Machine (JVM) inside an SGX enclave.• Application: Secure Compute and Secure Storage in cloud space.
PATENT APPLICATIONS	<ul style="list-style-type: none">• INSTRUCTIONS THAT FACILITATE THE IMPLEMENTATION OF THE FORK SYSTEM CALL IN PROCESSES USING SOFTWARE GUARD EXTENSIONS• APPARATUS AND METHOD FOR IMPLEMENTING A FORKED SYSTEM CALL IN A SYSTEM WITH A TRUSTED ENCLAVE

ACADEMIC
PROJECTS

Preemptive Operating System [CSE-506]

August 2013 - December 2013

- Developed a pre-emptive kernel OS from scratch.
- This kernel handles user I/O, software and hardware interrupts, system calls, timer based scheduling etc.
- Project URL: <https://github.com/prashantpandey/preemptive-os>

Compiler for Language E- [CSE-504]

February 2014 - May 2014

- Developed a compiler from scratch for the language E-.
- The project involved lexical analysis, semantic analysis, type checking, intermediate code generation, optimization and machine code generation.
- Project URL: https://github.com/prashantpandey/E--_compiler

Client-Server model using Chain Replication for supporting Fault-Tolerance and High Availability [CSE-535]

August 2014 - December 2014

- In this course project, we implemented a client-server model for the chain replication algorithm for high-availability and fault-tolerance. It is implemented in two different languages: DistAlgo and NodeJs.
- Project URL: <https://github.com/prashantpandey/ChainReplicationDistributedSystem>

Long Reads Genome Assembly [CSE-549]

August 2013 - December 2013

- We implemented the first component of a de-novo assembler for long reads obtained from a PacBio RS sequencing machine. <http://schatzlab.cshl.edu/teaching/2013/pacbioasm.shtml#!>
- Project URL: <https://github.com/prashantpandey/longread-genomeassembly>

TECHNICAL
SKILLS

Programming Languages: C/C++, Java, Python, NodeJs

RESEARCH
EXPERIENCE

Research Assistant, Algorithms Lab, Stony Brook University

August 2014 - Present

Data Structures and Algorithms for Big-Data and External Memory

Research Intern, Intel Labs

Summer 2014, 2015

Secure Cloud Stack using Intel SGX Technology

Member Technical Staff, TIBCO Software India Ltd

July 2011 - June 2013

ActiveMatrix Platform Development

- Developed AMX JRE updater utility for the existing installations of ActiveMatrix SB/SG product suite.
- Designed and developed AMX Messaging Bus Cleanup tool to destroy the orphan queues from the AMX Messaging Bus backbone.
- Implemented Single Sign-On (SSO) feature using Security Assertion Markup Language (SAML) in Java.
- Wrote an Eclipse plugin for Graph Dependency Analyzer using Eclipse Zest plugin. <http://www.eclipse.org/gef/zest/>
- Worked on developing a Product Modeling framework in Groovy for AMX Platform.

Project Intern, Symantec India Ltd

August 2010 - April 2011

Open-Source Desktop Search Engine using Apache Lucene and Apache Tika

- Successfully implemented features: environment specific search, CPU utilization intelligence, Index file portability and media index integration.
- Project URL: <http://github.com/opensourcecse>

TEACHING
EXPERIENCE

Teaching Assistant, CS Dept, Stony Brook University

August 2013 - Dec 2015

- CSE 110: Introduction to Computer Science (Advanced Java)
- CSE 535: Async Systems
- CSE 548: Analysis of Algorithms

AWARDS AND
ACHIEVEMENTS

- A Special CS Department Chair Fellowship, Stony Brook University.
- University Rank Holder, (Dept. of Information Technology VIIT, University of Pune).
- Academic Excellence Scholarship from Dept. of Information Technology VIIT, University of Pune.

LINKS

GitHub

<https://github.com/prashantpandey>

Linked profile

<http://www.linkedin.com/pub/prashant-pandey/14/1a6/581>

Personal Website

<http://www3.cs.stonybrook.edu/~ppandey>