

Pranav Kant

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Education

University of Utah

M.S., COMPUTER SCIENCE

Salt Lake City, Utah, USA

Expected: July 2020

- **GPA:** 4.0/4.0
- **Courses:** Advanced Compilers, Computer Architecture, Programming Languages, Advanced Algorithms, Embedded Systems
- Tentative thesis in Compilers

National Institute of Technology

B.TECH., COMPUTER SCIENCE AND ENGINEERING

Hamirpur, Himachal Pradesh, India

May 2015

- **GPA:** 7.4/10 (class topper: 8.2)
- **Courses:** Algorithms & Data structures, Object-oriented Paradigm, Advanced Computer Architecture, Advanced Computer Networks, Advanced Operating Systems, Information Security, Artificial Intelligence, Digital Image Processing
- **Thesis:** Program Dependence Mesh: A data-driven, synthesizable intermediate representation for imperative programs

Skills

Programming C/C++, Javascript, Python, Java

Web Django, Node.js, Rails, Flask

Design Adobe Photoshop, GIMP, Inkscape, Adobe Flash

Others LLVM, MongoDB, Redis, Neo4j, MySQL, PostgreSQL, Boost (C++), GTK+, Cairo, Metasploit

Work Experience

University of Utah

GRADUATE RESEARCH ASSISTANT

Salt Lake City, Utah

Jan 2019 - Present

- Working on superoptimizer for LLVM IR.

University of Utah

GRADUATE TEACHING ASSISTANT (FOR CS3810 - COMPUTER ORGANIZATION)

Salt Lake City, Utah

Aug 2018 - Dec 2018

- Evaluating homework assignments, exams, and holding regular office hours for students.

Collabora (Open-source consultancy company based in Cambridge, UK)

Remote

SOFTWARE ENGINEER (WORKING ON LIBREOFFICE)

Jan 2016 - Jul 2018

- 2nd highest contributor worldwide to LibreOffice Online (similar to Google docs) and Certified LibreOffice Professional Developer.
- Created a monitoring console from scratch to monitor the LibreOffice Online server from the browser (wrote backend in **C++** and frontend in **Javascript**).
- Developed a **C++** API to expose comments in LibreOffice core (equivalent to Microsoft Office), and tunneled them to the browser via LibreOffice Online back-end.
- Created a framework in **C++** to tunnel dialogs from LibreOffice in headless mode to browser.

Jugnoo (Hyperlocal delivery platform and auto-rickshaw aggregator)

Chandigarh, India

BACKEND DEVELOPER

Jul 2015 - Jan 2016

- Maintained backend authorization module in **Node.js** used by multiple Jugnoo apps for authentication; worked on several bugfixes.
- Developed a user referral leaderboard using **Redis** sorted sets and CSV file importer for the backend support team.

Google Summer of Code 2015 (LibreOffice)

Remote

STUDENT DEVELOPER

May 2015 - Aug 2015

- Wrote a Gtk+ widget in **C++** to expose LibreOffice functionality, and integrated it successfully in gnome-documents.

Google Summer of Code 2014 (GNOME)

Remote

STUDENT DEVELOPER

May 2014 - Aug 2014

- Added support for browsing DLNA media servers in gnome-photos, GNOME's photo management application.

Woocation

Hamirpur, India

CO-FOUNDER

May 2012 - Aug 2013

- Bootstrapped a startup idea - a recommendation engine based travel platform providing optimized routes, weather updates, and places to visit.
- Used Natural Language Processing to expose flight connections (using **Neo4j** - a graph database), weather, and transportation data (using **OSRM**).

Projects

Little Lang: New programming language for high-performance integer computation

University of Utah, USA

COURSE PROJECT FOR ADVANCED COMPILERS

Aug 2018 - Present

- Wrote a recursive descent parser and typechecker in **C++** for our language; used visitor pattern for AST traversal.
- Lowered the AST to LLVM IR format; runtime checks for array out-of-bounds; analyzed, researched, and improved lowering with help of various benchmarks.
- Analyzed, and researched the effect of varying integer widths on performance.

Program Dependence Mesh: A data-driven interpretation of imperative programs

NIT Hamirpur, India

UNDERGRADUATE THESIS

Aug 2014 - May 2015

- Invented a synthesizable representation, called Program Dependence Mesh (PDM), of programs written in imperative languages.
- Used LLVM to write a compiler pass to generate PDM from LLVM IR. The target of PDM is a unified platform that can be used as an ASIC, a CPU, or even a CGRA.

Fingerprint authentication platform

Chandigarh, India

CONSULTANT DEVELOPER

Aug 2013 - Oct 2013

- Next generation secure login system using NBIS. **Reverse-engineered** Windows drivers for Futronics fingerprint scanner.

Conferences & Talks

Oct '17 **Google Mentor Summit**, Represented LibreOffice

Mountain View, USA

Oct '17 **LibreOffice Conference**, Talk on "Native comments" and "Dialog tunneling"

Rome, Italy

Sep '16 **LibreOffice Conference**, Talk on "New features in LOKDocView widget"

Brno, Czech Republic

Sep '15 **LibreOffice Conference**, Talk on GSoC '15 project, "Integrating LibreOffice with GNOME"

Aarhus, Denmark

Aug '15 **GNOME Conference**, Talk on GSoC '15 project, "Integrating LibreOffice with GNOME"

Gothenburg, Sweden

Jul '15 **Fedora Conference**, Talk on "Automated UI testing"

Pune, India

Jul '14 **GNOME Conference**, Talk on GSoC '14 project, "Browsing DLNA Media servers"

Strasbourg, France

Volunteer Experience

Peloton

Nov 2017 - Apr 2018

- Bugfixes and improvements in **C++** to Carnegie Mellon University's self-driving database management system.

Mozilla

Jan 2014

- Added support in **C++** for accessing raw, binary data on UDP sockets.

Fedora

Oct 2014 - PRESENT

- Maintainer of SFML, sshrc, proxychains-ng, soundconverter in Fedora repositories. Reviewer and tester of other Fedora packages.

GNOME

Jan 2014 - Jan 2016

- Setup automated UI testing framework. Several bugfixes in gnome-photos and gnome-documents.

Extracurricular Activity

Google Summer of Code 2017

Remote

MENTOR

May 2017 - Aug 2017

- Mentored a GSoC project on LibreOffice Online to successful completion. It involved several bug fixes and improvements to LibreOffice Online including adding a horizontal ruler for the documents.

GNU/Linux User Group (GLUG-NITH)

NIT Hamirpur

SYSADMIN & CLUB LEAD

May 2012 - May 2015

- Installed & maintained Ubuntu, Fedora, BOSS, GNU, kernel.org, LinuxMint, and LDP mirror servers.
- Developed & maintained pastebin, exam result software on student server.
- Installed and maintained club's mail server, web server, wiki, and local project hosting.
- Organized inaugural events: Software Freedom Day, Linux Installation fests, NITH Hackathon, Codechef Coding Competition, and educational meetups.

Computer Science & Engineering Community (CSEC)

NIT Hamirpur

SYSADMIN & TECHNICAL CLUB LEAD

May 2013 - May 2015

- Represented NIT Hamirpur in IIT Delhi and IIT Mumbai annual technical competitions.
- Organized NITH Hackathon; inaugurated ACM ICPC Chapter and CodeChef chapter.
- Conducted several coding competitions as part of CSEC annual technical festival.