

# Sahil Verma

FIRST YEAR GRADUATE STUDENT · COMPUTER SCIENCE AND ENGINEERING, UNIVERISTY OF WASHINGTON

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## Education

### Univeristy of Washington

PH.D., COMPUTER SCIENCE AND ENGINEERING

Seattle, USA

2019 - 2024 (Expected)

- GPA at the end of 3<sup>rd</sup> quarter: **3.8/4.0**

### IITK (Indian Institute of Technology, Kanpur)

BACHELOR OF TECHNOLOGY, ELECTRICAL ENGINEERING

Kanpur, India

2015 - 2019

- Cumulative Grade Point/ CPI at the end of 8<sup>th</sup> semester: **8.2/10.0**

### DELHI PUBLIC SCHOOL, BOKARO

ICSE

Bokaro Steel City, India

2015, 2013

- 12<sup>th</sup> GRADE | Aggregate **96.0%**
- 10<sup>th</sup> GRADE | Aggregate **95.2%**

## Honors & Awards

2018	<b>Awarded \$1500 by ACM SIGPLAN</b> , Attending PLMW, PLDI	USA
2017	<b>Awarded \$1800 by Google India</b> , Attending FSE	Germany
2015	<b>All India Rank 663</b> , IIT-JEE Advanced	India
2015	<b>0.1 Percentile</b> , IIT-JEE Mains	India
2015	<b>KVPY Fellow   All India Rank 205</b> , IISc Bangalore and Government of India	Banglore, India
2015	<b>Top 1%</b> , National Standard Examinations in Chemistry	India
2015	<b>Top 1%</b> , National Standard Examinations in Biology	India

## Publications

### Fairness in Ranking

Univeristy of Washington

RESEARCH PROJECT, PROF. CHIRAG SHAH

Jan 2020 - Jan 2020

- Paper titled "Facets of Fairness in Search and Recommendations" accepted at Bias, ECIR 2020.
- We collected 25 definitions of fairness in ranking from literature
- We categorized the definitions in 5 major recommendations settings.

### Fairness in Machine Learning PAPER

Univeristy of British Columbia

RESEARCH PROJECT, PROF. JULIA RUBIN

August 2017 - Jan 2018

- Paper titled "Fairness Definitions Explained" accepted at Fairware, ICSE 2018.
- We examined the similarities and differences across all definitions in fairness literature.

### Program Repair PAPER

IIT Kanpur

SUMMER PROJECT, PROF. SUBHAJIT ROY

May 2016 - Feb 2017

- Paper titled "Synergistic Debug-Repair for Heap Manipulations" accepted at ESEC/FSE, 2017.
- Developed interaction of live execution of heap programs and instantaneous memory state graphical representation with the program repair engine.
- Developed features like hot-patching (runtime repair and insertion of newcode).
- Proposed the idea of synergistic debug and repair of programs in the tool named Wolverine.

## Current and Past Research Projects

### Fairness in Machine Learning

Univeristy of Washington

RESEARCH PROJECT, PROF. MICHAEL ERNST & PROF. RENE JUST

Sep 2019 - Present

- Devised an algorithm to identify biased datapoints in a dataset.
- Empirically shows that our techniques leads to zero discrimination levels for all our benchmarks.
- Empirically shown to beat many popular previous techniques.

## Bug Detection in Machine Learning Code

RESEARCH PROJECT, PROF. ZHENDONG SU

ETH Zurich

May 2019 - Sep 2019

- Designed an algorithm to detect shape incompatibility bugs in Tensorflow code.
- We beat vanilla Tensorflow by more than 400X in time performance.
- To the best of our knowledge, we are the first to build a tool for bug detection in Tensorflow.

## Bug localization

RESEARCH PROJECT, PROF. SUBHAJIT ROY

IIT Kanpur

May 2018 - May 2019

- Developed a novel algorithm for bug localization for heap programs.
- Integrated the bug localization with program repair in the tool Wolverine.
- Achieved an average speed up of about 225X in repair timings in Wolverine.

## Development Projects

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### Database Systems CODE

IIT Kanpur

COURSE PROJECT, PROF. MEDHA ATRE

Aug 2016 - Nov 2016

- Developed a system which displayed the real time statistics like memory usage, number of threads, number of queries etc. for a database system.
- Demonstrated the effectiveness of the system via extensive query firing at the employed database system (MySQL).

## Relevant Courses

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### Completed

Reasoning for Software   Deep Learning   Foundations of Fairness in Machine Learning

### Ongoing

Machine Learning

## Skills

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**Programming**   C/C++, Python, Octave, R

**Utilities**   Numpy, Tensorflow, PyTorch, Keras, NLTK, scikit-learn, OpenCV, Bash, Git, GDB,  $\text{\LaTeX}$ , Vim

**Web**   Django, JavaScript, HTML, CSS, SQL