Neeraj Kumar
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Computer enthusiast with over eight years of experience in computer science research and engineering.

Education

- **University of California, Santa Barbara** (Fall 2015 - Winter 2020)
  Ph.D Computer Science (Graph and Geometric Algorithms)
  Thesis title: *Geometric Constraint Removal and Related Problems*
- **University of Waterloo, Canada** (Fall 2013 - 2015)
  Master of Mathematics, Computer Science (Algorithms and Complexity)
  Thesis title: *Width properties of control-flow graphs and applications*
- **Indian Institute of Technology, Varanasi, India** (2006 - 2010)
  Bachelors in Computer Science

Work Experience

- **PhD Intern, Facebook Inc.**, Cambridge, MA (June 2019 - Sept 2019)
  Algorithms for Data Warehouse Graph Compression
- **Graduate Technical Intern, Intel Corporation**, Hillsboro, OR (June 2018 - Sept 2018)
  Algorithms for Computing Visibility between Polygon Edges.
- **Graduate Technical Intern, Intel Corporation**, Santa Clara, CA (June 2016 - Sept 2016)
  Geometric Algoritms for Layout Processing.
- **Senior Member of Technical Staff, Mentor Graphics**, India (May 2010 - Aug 2013)
  Algorithmic solutions for Mentor's next generation emulation platform.

Technical Skills

- **Programming languages** C++(Proficient), C, Perl, Python, php, bash (Good), Java (basic)
- **Operating systems/Tools** Linux (Ubuntu), GDB, version control (git, svn, cvs), awk, sed
- **Other** Graph Algorithms (Proficient), Computational Geometry (Proficient)

Publications[1]

1. **Approximating Min-Color Path on Color-Connected Planar Graphs**
   Neeraj Kumar, Daniel Lokshtanov, Saket Saurabh and Subhash Suri **(In Submission, 2020)**
2. **The Maximum Exposure Problem**
   Neeraj Kumar, Stavros Sintos and Subhash Suri *at* Approx 2019, MIT, USA
3. **Computing a Minimum Color Path in Edge-Colored Graphs**
   Neeraj Kumar at Symposium of Experimental Algorithms (SEA) 2019, Kalamata, Greece

[1] Unless marked with $*$, authors are listed in alphabetical order

4. **Improved Approximation Bounds for the Minimum Constraint Removal Problem**
   S. Bandyapadhyaya, *N. Kumar*, S. Suri and K. Varadrajan *at* Approx 2018, Princeton, USA
   Journal version appeared in *Computational Geometry: Theory and Applications, 2020*

5. **Computing Shortest Paths in the Plane with Removable Obstacles**
   Pankaj K Agarwal, *Neeraj Kumar*, Stavros Sintos and Subhash Suri *at*
   Scandinavian Symposium and Workshops on Algorithm Theory (SWAT) 2018, Malmo, Sweden.

6. **Shortest paths in the plane with Violations.**
   John Hershberger, *Neeraj Kumar* and Subhash Suri *at*
   European Symposium of Algorithm (ESA) 2017, Vienna, Austria
   Journal version appeared in **Algorithmica, 2020**

7. **Counting Convex k-gons in an Arrangement of Line Segments**
   Martin Fink, *Neeraj Kumar* and Subhash Suri *at*
   Canadian Conference on Computational Geometry (CCCG), 2016 Vancouver, Canada.

8. **SiPTA: Signal Processing for Trace-based Anomaly Detection***
   Authors: MM Zeinali, MA Salem, **N Kumar**, G Cutulenco and S Fischmeister, *at*
   International Conference on Embedded Software (Emsoft) 2014

Other projects

- *Computational Geometry Challenge 2020* : Algorithms for minimum convex partition problem.
- *Google Summer of Code 2014* (OGDF) : Algorithms for treewidth of undirected graphs.
- *Google Summer of Code 2010* (ScummVM) : Game engine for testing ScummVM subsystems.
- Implemented neural network based model for traffic sign detection.
- Performed a holistic analysis of shared library performance on NUMA machines.

Select Graduate Coursework

- Computational Geometry
- Graph-theoretic Algorithms
- Foundations of Data Science
- Advanced Data Mining and Machine Learning

Miscellaneous

- **Scholarships and Awards**
  - Distinguished Graduate Student Speaker (UCSB), 2018.
  - Lead Teaching Assistant, Computer Science (UCSB), 2017-18.
  - Outstanding Teaching Assistant (UCSB), 2015-16.
  - Graduate Entrance Scholarship (UWaterloo), 2013.
- **Teaching assistant**
  - *Graduate courses:* CS 235 (Computational Geometry), CS 231 (Advanced Algorithms)
  - *Undergraduate courses:* CS 130A, 130B (Algorithms and Data Structures, UCSB) CS341 (Algorithms, UWaterloo)
- **Languages** English (fluent), Hindi(fluent)