Neeraj Kumar
sud03r.github.com

☎: +1-805-886-2271
✉: neeraj@cs.ucsb.edu
⌂: 243 Mathilda Drive, Apt 6, Goleta, CA 93117

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

Education

- **University of California, Santa Barbara** (Fall 2015 - Winter 2020 (Expected))
  PhD Candidate, Computer Science
  Graph and Geometric Algorithms, GPA : 3.93
  Thesis: Geometric Constraint Removal and Related Problems
  Advisor : *Subhash Suri*
- **University of Waterloo, Canada** (Fall 2013 - 2015)
  Master of Mathematics, Computer Science
  Algorithms and Complexity, GPA : 93.2%
  Thesis: Width properties of control-flow graphs and applications
- **Indian Institute of Technology, Varanasi, India** (2006 - 2010)
  Bachelors in Computer Science
  GPA : 8.69/10

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 Software Developer, Mentor Graphics**, India (May 2010 - Aug 2013)
  Algorithmic solutions for Mentor's next generation emulation platform.

Technical Skills

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

Publications[1]

1. **The Maximum Exposure Problem**
   Authors: **Neeraj Kumar**, Stavros Sintos and Subhash Suri *at*
   22nd International Conference on Approximation Algorithms for Combinatorial Optimization Problems (APPROX) 2019, MIT, USA.

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

2. **Computing a Minimum Color Path in Edge-Colored Graphs**

   Author: **Neeraj Kumar** *at*
   Special Event on the Analysis of Experimental Algorithms, SEA^2 2019, Kalamata, Greece

3. **Improved Approximation Bounds for the Minimum Constraint Removal Problem**

   Authors: Sayan Bandyapadhyaya, **Neeraj Kumar**, Subhash Suri and Kasturi Varadrajan *at*
   21st International Conference on Approximation Algorithms for Combinatorial Optimization Problems (APPROX) 2018, Princeton, USA.

4. **Computing Shortest Paths in the Plane with Removable Obstacles**

   Authors: Pankaj K Agarwal, **Neeraj Kumar**, Stavros Sintos and Subhash Suri *at*
   16th Scandinavian Symposium and Wrokshops on Algorithm Theory (SWAT) 2018, Malmo, Sweden.

5. **Shortest paths in the plane with Violations.**

   Authors: John Hershberger, **Neeraj Kumar** and Subhash Suri *at* 25th European Symposium of Algorithms, (ESA) 2017, Vienna, Austria
   Journal version appeared in **Algorithmica**

6. **Counting Convex k-gons in an Arrangement of Line Segments**

   Authors: Martin Fink, **Neeraj Kumar** and Subhash Suri *at*
   28^{th} Canadian Conference on Computational Geometry (CCCG'16), Vancouver, Canada.

7. **SiPTA: Signal Processing for Trace-based Anomaly Detection***

   Authors: MM Zeinali, MA Salem, **N Kumar**, G Cutulenco and S Fischmeister, *at* $EMSOFT'14$.

Select Graduate Coursework

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

Advanced Data Mining and Machine Learning

Other projects

- A neural network based system to identify traffic signs, achieved 99.2% on german traffic database.
- For an advanced operating system course, we performed a holistic analysis of shared library performance on NUMA architectures.
- Practical algorithms for analyzing worst-case execution time of programs.
- **Google Summer of Code 2010** (with ScummVM) : Designed a game engine for testing ScummVM subsystems.
- **Google Summer of Code 2014** (with OGDF) : Algorithms for computing treewidth of undirected graphs.

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 , UCSB), CS 231 (Advanced Algorithms , UCSB)

  Undergraduate Courses: CS 130A, 130B (Algorithms and Data Structures, UCSB) CS341 (Algorithms, UWaterloo)
- **Languages** English (fluent), Hindi(fluent)