Neeraj Kumar
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Research Interests Algorithmic graph theory, Computational geometry, Algorithm Engineering.

Education

- **University of Waterloo, Canada**
  Master of Mathematics in Computer Science *(Fall 2013 - current)*
  CGPA : 93.2%

- **Indian Institute of Technology, Varanasi, India**
  Bachelor of Technology in Computer Science and Engineering *(2006 - 2010)*
  CGPA : 8.69/10

Work Experience

- **Graduate Research Assistant, University of Waterloo**, Canada. *(Sep 2013 - current)*
  Working on applying graph-theoretic concepts to software technology and verification of safety-critical systems. Currently, I am exploring DAG-width of structured programs and its application to μ-caluculs model checking problem.

- **Senior Member Technical Staff, Mentor Graphics**, Noida, India. *(July 2010 - Aug 2013)*
  Worked with Veloce compiler team on challenging optimization problems like partitioning, placement of large electronic designs.

Selected Projects

- **Computation of Treewidth** *Google Summer of Code 2014, OGDF* [1]
  Treewidth is a metric to measure tree-likeness of a graph. The goal of the project was to implement some heuristics for computing treewidth and tree-decomposition of a graph and efficiently solve some NP-hard problems on graphs of bounded treewidth.

- **Shared Libraries on NUMA** *Course Project*
  In this project, we performed a holistic analysis of shared library performance on NUMA architectures. We wrote an evaluation paper[2] summarizing our observations.

- **A test framework for scummVM's subsystems** *Google Summer of Code 2010, ScummVM* [3]
  The objective of this project was to enhance the ScummVM unit testing infrastructure by implementing a Game Engine that could could invoke and test various ScummVM subsystems in an integrated and non-isolated manner.

Technical Skills

- **Programming languages**: C++(Proficient), C (Good), Perl (Good), shell-scripts (Good), php/java (basic)
- **Operating systems**: Linux (Ubuntu evangelist), Windows
- **Programming Tools**: GDB (Proficient), version control (git, svn, cvs), awk, sed, etc.

Miscellaneous

- **Publication** SiPTA: Signal Processing for Trace-based Anomaly Detection, at *EMSOFT*'14
- **Scholarships** Graduate Entrance Scholarship (University of Waterloo), CBSE Merit Scholarship (India)
- **Opensource Software** Code contributions for OGDF, ScummVM and ES operating system.
- **Teaching Assistant** for CS341 : Algorithms; CS350 : Operating Systems and CS230 : Introduction to Computer Systems, at the University of Waterloo.