(+91) 94500-39421
github.com/pankajprateek

PANKAJ PRATEEK

pratikkr@cse.iitk.ac.in
pankaj200292@gmail.com

EDUCATION

Year	Qualification	Institution	Result
2015	B.Tech + M.Tech, Computer Science & Engineering	IIT Kanpur	10/10 (M.Tech.), 8.9/10 (B.Tech.)
2010	Class XII: AISSCE	DAV, Kota	91%
2008	Class X: AISSE	St. Anne's, Jodhpur	95%

PUBLICATIONS

Pankaj P., Jeetesh M., Amey K., Sumit G., Amitabha M. **Anaphoras without syntax - in a Geometry Construction context**. *Submitted to ICON, 2014*.

RESEARCH PROJECTS

M.Tech. Thesis: Approximation Algorithms for common subtree & related problems (Mentor: Prof. S. K. Mehta) (Dec '13 – now)

- Investigating approximation algorithms and parameterization techniques for the common sub-tree problem and trying to apply them to specialized classes of graphs and related problems like tree edit distance

Anaphora without syntax (Mentor: Prof. A. Mukerjee, Prof. A. Karkare, Dr. Sumit Gulwani (MSR Redmond)) (Aug '13 – now)

- Designed a language-independent system for high-school geometry construction problems
- Achieved an accuracy of more than 90% for English and Hindi using cross lingual mapping (probabilistically mapping constructs/words in different languages), heuristic based parsing and context based semantic analysis to handle anaphora

Hunting Compiler Concurrency bugs using x86-tso memory model (Mentor: Dr. Francesco Zappa Nardelli) (May '13 – July '13)

Team Parkas, **INRIA**, Paris-Rocquencourt

- Aimed at hunting concurrency bugs in GCC and CLANG to improve compiler optimizations for multi-processor applications
- Added global memory trace to study effect of compiler optimizations on global memory accesses, and replay instrumentation to study the manner in which a load instruction affects subsequent instructions
- Added support for control dependency analysis to study effects of conditional statements, and MMX/SSE (128 bit SIMD) instructions

KEY IMPLEMENTATION PROJECTS

Multi-Lingual word learning for containment situations (Mar '13 – Apr '13)

- Attempted to learn synonymous words in multiple languages for a given context using common ground semantics & label association
- Learned design specifications in the given context (peg-in-a-hole) and then tried to learn linguistic semantics for them

Extension of the PintOS operating system (Sept '12 – Nov '12)

- Implemented system calls, shared memory, virtual memory, demand paging, indexed file system & scheduling policies on PintOS
- Used the modified system to implement a solution to the Readers-Writers concurrency problem

Using Progressive Stochastic Search to solve Sudoku CSP (Jan '12 – Apr '12)

- Modelled Sudoku as a constraint satisfaction problem and implemented PSS and iterative PSS to solve a given Sudoku puzzle
- Observed that PSS and IPSS are better than other stochastic algorithms like Simulated Annealing and Cultural Genetic Algorithm

Easy Cloud Storage (Aug '13 – Nov ' 13)

- Developed a Cloud Storage Platform which integrates existing cloud services like **Dropbox, Google Drive, SkyDrive** and **Box.net**

SKILLS

Experience in Algorithmic and Competitive Programming

- **Codechef** (boygenius: long contest rating **1577**), **SPOJ** (pankaj_prateek: global rank **1007**), **Codeforces** (boygenius: rating **1646**), **Hackerrank** (boy_genius: Score **2136**)
- **Problem setter** for various intra IITK and open-to-all contests
- **Set up judges** (DomJudge) for online programming contests (ACM-ICPC style) and assignments for various courses

Proficient (**C, C++, Python, PHP**), Pascal, OCaml, Assembly (x86 & MIPS), Git, SVN, bash scripting, gdb, Lex/Yacc, Matlab

POSITIONS OF RESPONSIBILITY

Coordinator, IOPC (International Online Programming Contest) and Software Corner, Techkriti'13

- **Problem Setter and Tester** for **IOPC**, premier algorithmic coding contest among colleges of India
- Achieved a **100%** increase in the number of teams **(793)** participating in IOPC
- Pioneered **India's first International High Performance Computing Contest** on CDAC's **Param supercomputer**
- Revamped **Battlecity (AI design)** by taking the contest online, resulting in **12x participation and international interest**
- Elevated **Chaos (an unknown programming language contest)** to international level

Instructor, Advanced C++ course, ACA Summer School' 14

- Taught Object Oriented Programming, Polymorphism, STL and Exceptions in C++ to a batch of more than 150 students