PANKAJ PRATEEK KEWALRAMANI

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CSE Department
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EDUCATION

Year	Degree	Institution/Board	CPI / % age
2010 - 2014*	B.Tech	Indian Institute of Technology, Kanpur	8.7/10 (=3.5/4)
2010	XII	DAV Public School, Kota (C.B.S.E.)	91%
2008	X	St. Anne's Sr. Sec. School, Jodhpur(C.B.S.E.)	95%

Expected Year of Graduation

AREAS OF INTEREST

- Design and Analysis of Algorithms

- Artificial Intelligence, Machine Learning (Automated Systems) and Computer Vision

- Number Theory and Cryptology

- Programming Languages

- Compilers and Compilers Concurrency

- Databases and Data Mining

- Natural Language Processing

- Cognitive Science

PROJECTS

GROUNDED ACQUISITION OF SYMBOLS
Course Project: Cognitive Science *(Presentation Due)(Mar '13 - Apr '13)*

- Extended the work done by Dr. Amitabha Mukherjee and Madan Dabbeeru in their paper "Using Symbol Emergence to Discover Multi-Lingual Translations in Design".
- Extended the Baby Designer Model presented in the previous paper to the native Hindi language.

COMPILER FOR C++
Course Project: Compilers *(Jan '13 - Apr '13)*

- Implemented a working compiler for programming language C++.
- Phase-1: Implemented Lexer and error free grammar.
- Phase-2: Implemented Parser along with Semantic Rules for Symbol-Table, used 3-Address Code.
- Phase-3: Complete translation into Assembly Languge for MIPS Architecture.
- Implemented in C and used tool LEX and YACC for building Lexer and Parser.

AUTOMATION OF POST-GRADUATE APPLICATION SYSTEM
Course Project: Database Systems *(Jan '13 - Apr '13)*

- Implemented the portal having facilities for creating students profile. The profile would allow the applicant to apply online as compared to the existing system. The profiles have to be approved by an administrator.

- The interface programming was done in Html and JavaScript, database built on MySql and the interaction between them was done by PHP.

APPLICATION DEVELOPMENT
Microdoft Appathon '13 *(March '13)*

- Implemented a Windows 8 application which would sync a persons data across various online cloud services such as Dropbox, Skydrive, etc.
- The user was provided with an abstract view of his space across various services and he could also arrange the synced files manually.
- Developed a proof-of-concept which could inspire furthur work.
- The implementation was done in Javascript using the Windows API, and other relevant APIs were used.

APPLICATION DEVELOPMENT
Microdoft Appathon '13 *(March '13)*

- Implemented a Windows 8 application, FutureTV, which would show a user the latest and popular videos (TV show episodes, songs etc.) according to his subscribed genre.
- The implementation was done in C# using the Windows API.

SECURE IP
Course Project: Computer Networks *(Nov '12)*

- Implemented a Secure IP to send secure data packets across the network
- Used the **AES** scheme for encrypting and decrypting data packets and **md5 hash** to check the integrity of the data
- A Graphical interface to establish peer to peer connection also facilitating data input and displaying the received data.

EXTENSION OF PINTOS
Course Project: Operating Systems *(Aug '12 - Oct '12)*

- Have to design various functionalities in PINTOS - instructional software that runs as a secondary OS on Linux.
- Includes implementation of techniques for synchronization, demand paging, scheduling, virtual memory management, page fault and swapping, and simple system calls.
- Total implementation in 'C'.

PARSER GENERATOR IN PYTHON
Mentor: Dr. Amey Karkare, CSE, IITK *(May '12 - July '12)*

- Built a parser generator in Python which takes a BNF form grammar file and performs lexical analysis on it.
- To generate the set of rules and determine if the set is valid or not
- Compute the first set, follow set, LL(1) Parse Table, LR(0) Item Sets and Parse Table, SLR(1) Parse Table, LR(1) Item Sets and Parse Table and LALR(1) Item Sets and Parse Table.
- Generated a parser to parser grammar expressions using the above.
- Designed the GUI using PHP and hosted the working model on the CSE local server.

USING PSS TO SOLVE SUDOKU CSP
Course Project: Artificial Intelligence Programming *(Feb '12 - Apr '12)*

- Implemented Progressive Stochastic Search (PSS) and Iterative PSS to solve Sudoku.
- Modelled Sudoku as a Constraint Satisfaction Problem and implemented it using C++.

MACHINE LEARNING
Summer Project under Programming Club, IIT Kanpur *(May '11 - June '11)*

- Developed a Tron bot (based on the movie Tron), incorporating in it learning procedures so that it improves it skills as it plays against other AI bots.

- Use of pygame package of Python for developing the graphical interface of the bot.

ARCHITECTURE PROJECT

Course Project: Computer Organization and Architecture *(August '11 - October '11)*

- Programmed a 32-bit ALU on a XILINX Spartan3 FPGA board, using BSV as hardware programming language.
- Arithmetic and logical operations could be easily done using this system.

WEB DEVELOPMENT

Yahoo HackU! 2011 *(August '11)*

- Made a portal for online quizzing. Apart from the normal quizzing modules, it would take the question from the quizmaster and grade it for difficulty by searching for the question and the answer throughout the Web.
- This was done by integerating Yahoo APIs with PHP and cURL using OAuth.

APPLICATION DESIGNING

Code-a-Thon 2011 under ACA, IIT Kanpur *(Feburary '11)*

- Developed a peer-to-peer messenger for exchanging messages between two computers connected on a LAN network.
- Used C for developing the messenger.

SIMULATION

Electrovate, IIT Kanpur *(September '10)*

- Simulated a counter which would count the number of people in a room. It would add one to the current value when a person enters a room and subtract one in the other case.
- This was done using LEDs, Gates, Flip-Flops, etc. that simulated a system.

ACHIEVEMENTS

- Selected for Summer Research Fellowship at **Carnegie Mellon University**.

- Selected for Summer Research Fellowship at ***Institut national de recherche en informatique et en automatique*** (INRIA), France.

- **Codeforces** rating of **2500+** : Profile (handle: boygenius)

- World rank in **top 700** at **Spoj** : Profile (handle: pankaj_prateek)

- Among the **top 250** participants from India in **Project Euler** (handle: pankaj_prateek)

- Ranked **12** (handle: boygenius) in the Inter-IIT Programming Contest, Interview Street : Rank list

- Secured All India Rank of 157 in JEE-2010 competing against 450,000 applicants

- Was among top 0.2% in All India Engineering Enterance Exam, 2010 conducted by CBSE (AIR-160)

- Awarded **Gold Medal** in the **Orientation-cum-Selection Camp(OCSC)** for the **International Chemistry Olympiad** conducted by **HBCSE, TIFR** in the year 2010

- Qualified for **Indian National Olympiad in Informatics (INOI)** in 2008

- Awarded the prestigious **Kishore Vigyan Protsahan Yojana(KVPY)** fellowship by the Department of Science and Technology, Government of India in the year 2008

- Awarded the **National Talent Search Examination(NTSE) Scholarship** from 2008 onwards

- Awarded the **State Talent Search Examination(SSTSE) Scholarship** for securing 9th position in SSTSE organized by the Government of Rajasthan in the year 2008

- Selected amongst the top 1% students across the nation who appeared for the **National Standard Examination in Astronomy** in the years 2009 and 2010

- Secured 2nd position in the national-level Map Quiz conducted by the **Indian National Cartographic Association** in 2007

TECHNICAL SKILLS

- Efficient in coding in C, C++, Python

- Other Programming Languages: Pascal, Assembly Language (MIPS Architecture), BlueSpec Verilog, Oz, PHP, Bash Script, Windows Batch Script, Basic, Foxpro

- Softwares and Tools: Latex, Gnuplot, Octave, HTML5, HTML, Javascript, CSS, Xilinx ISE, AutoCAD, Lex, Yacc, Matlab, MS Office, Visual Studio, PLY (parsing tool in python)

- Hardware: experience with FPGA Boards, Integerated Circuts

- Operating Systems: Windows, Linux/Unix, Mac OS X

MISCELLANEOUS

- Coordinator of **ACA (Association of Computing Activities)**, Student body of CSE department, IIT Kanpur (2012-2013)

  - Helped the Yahoo team and the Microsoft team in conduction of **Yahoo Hacku! 12** and **Appathon '13** respectively.
  - Set up and maintained a programming judge (DomJudge).
  - Set up problems for the weekend programming contests at IITK.
  - Conducted a lecture series for Competitive Programming under the name **League of Programmers** at IITK.
  - Set up a server for hosting the practice problems for the first year students.
  - Helped the department in the conduction of Freshers, Farewell and other events.

- Coordinator of **IOPC (International Online Programming Contest)** and **Software Corner** for Techkriti 2013

  - Set up the problems for the **IOPC**, the annual programming contest during Techkriti (http://www.codechef.com/IOPC2013).
  - Successfully conducted the **first High Performance Computing Contest** in Asia during Techkriti '13 (http://ihpc.cdac.in/).
  - Designed the problems for **Chaos**, Unknown Language Programming Contest.
  - Helped in the designing of the game for **Battlecity**, the AI development challenge during Techkriti '13.

- Attended a workshop on Ethical Hacking and Cyber Security by CyberCure Solutions organized in IIT Kanpur in September 11

- Won Kodefest and came third in Semester Programming Contest organized by Programming Club, IITK

- Worked as a Student Guide in the Institute Counselling Service Team 2011-2012

  - Helped and supervised new students during their stay in First Year.
  - Regular meetings with them to help them adjust to the work culture of IIT Kanpur.

- Worked as Academic Mentor in the Institute Counselling Service Team 2011-2012

  - Took doubt clearing sessions and lectures for mechanics course for first year students.
  - Was given responsibility of two students, who were not doing well in their academics, to help them with academics and in adjusting them with the IIT Kanpur work culture.

RELEVANT COURSES

Computer Science
Fundamentals of Computing (in 'C')
Data Structures and Algorithms
Computer Organization
Discrete Mathematics
Artificial Intelligence
Programming Tools and Techniques
Operating Systems
Theory of Computation
Principles of Programming Languages
Computer Networks
Computational Number Theory and Algebra
Introduction to Mathematical Logic
Compiler Design*
Algorithms-2*
Principles of Database Systems*

    ∗ *To be completed by April '13*

Mathemetics Courses
Differential Equations
Complex Analysis and Linear Algebra
Real Analysis, Differentiation and Integeration

Miscellaneous
Introduction to Cognitive Science*
Introduction to Electronics