ASHWIN PARANJAPE
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EDUCATION

Year	Degree/Certificate	Institute	CPI/Percentage
2014 (currently 5th Semester)	B.Tech Computer Science and Engineering.	IIT Bombay	9.71/10.0
2010	Class XII : AISSCE (CBSE)	MGM, Bhilai	93.8%
2008	Class X : AISSE (CBSE)	DAV , Bilaspur	90.4%

RESEARCH INTERESTS

Robotics and Embedded Systems, Distributed Computing, Machine Learning, AI, Formal Verification

KEY ACHIEVEMENTS

- Ranked **2nd in the department** (out of 89 students, 2012)
- Awarded **Institute Academic Prize** for excellent academic performance (2011-2012)
- Secured highest grade (10/10) in 10 out of 11 Computer Science Courses
- Secured AP grade (awarded to 6 students out of 565) in CS 101: Introduction to Computer Programming (2010)
- Secured **All India Rank 81 in IIT-JEE** 2010 (out of 400 000 students)
- Awarded **Gold Medal** in **Indian National Physics Olympiad** (All India **top 35**, 2010)
- Selected for Orientation Camp :**International Olympiad on Astronomy and Astrophysics** (All India **top 35**, 2010)
- Secured **All India Rank 3** in National Science Olympiad (2008), **4** in National Cyber Olympiad(2010), **7** in International Mathematics Olympiad(2010)
- Selected for the prestigious **Kishore Vaigyanik Protsahan Yojana (KVPY) Fellowship 2010**

WORK EXPERIENCE

VISITING SCIENTIST, INSTITUTE OF SCIENCE AND TECHNOLOGY AUSTRIA *[Summer 2012]*

How can we use edit distances of unrealizable specifications to make them realizable? – Prof. Krishnendu Chatterjee

- Studied ω-automaton, Safra's construction and surveyed literature for existing methods and examples
- **Proved correctness** of **devised methods** to form deterministic Edit Automata from DFA, Buchi and Parity automata
- Proved **complexity bounds** and formulated **examples** indicating superiority over existing methods

RESEARCH INTERN, GCC RESOURCE CENTRE, IIT BOMBAY *[Summer 2011]*

Lazy Pointer Analysis –Prof. Uday Khedker

- Studied concepts like liveness and reaching definitions in data flow analysis and GCC compilation techniques
- Understood ongoing research on **Liveness based may-must pointer analysis** and corrected few minor mistakes
- Developed a **prototype implementation** which combined forward and backward analysis for non-procedural flow

KEY PROJECTS

MAGNETIC MODULAR ROBOTS *[Autumn 2009]*

Can we use modular robots and magnetism to create next generation of robots?

- Developed a theoretical model for **dynamic structures** composed of magnetically glued identical cubical modules
- Created schemes to generate **linear motion** between cubes(incapable of movement by themselves) solely based upon alternating attractive and replusive magnetic forces
- Also propsed rotary motion in a similar fashion requring only few special blocks for free rotation

SELF BALANCING ROBOTIC LEG *[Summer 2011]*

Learning from experience: An experiment using a robotic leg

- Abstracted the general problem into a **simplistic model** focusing on stimulus response
- Implemented kinematics equations of a robot to determine the joint parameters that provide a desired position of the end-effector (**inverse kinematics**) as an interface for giving commands
- **Fabricated a model** of a robotic leg and a balancing platform for implementation

WIRELESS MULTI-POINT RELAY SIMULATOR *[Autumn 2011]*

Can wifi on mobile devices be used to create a relay based mesh network?

- Conceptualized and implemented **additional protocols** over RTS-CTS increasing throughput without collisions
- Developed **routing protocols** for self-configuration of super-nodes and trunk-lines factoring **scalability**
- **Simulated packet transmission** over multiple layers on a randomly generated static network of nodes

QUANTUM COMPUTER SIMULATOR *[Spring 2011]*

An educational cum research tool for development and testing of quantum algorithms

- **Developed algorithms** to simulate quantum gates on registers by manipulation of binary trees
- Created a **macro based language layer** to feed functions directly in scientific **bra-ket notation**
- Implemented **standard quantum algorithms** like FFT and Grover's algorithm to show relevance and validity

PROGRAMMING ACTIVITIES

- Certified **C++ programmer** since **class IV** (National Institute of Information Technology, 2002)
- **Winner at Yahoo! HackU** for Developing DriveStack, which connects multiple cloud storage accounts of a user
- Developed Moodle Synchroniser and **Video Chat over Lan** during hackathons at IIT Bombay
- Designed **Institute Music Portal** and **Hostel Website**

POSITIONS OF RESPONSIBILITY

MANAGER, TECHNOVATION: INSTITUTE INNOVATION PROGRAM *[July 2012 till date]*

- **Leading** a new institute wide innovation program with the **largest funding** of all technical bodies
- Designed a **constitution** and procedure from scratch and worked on cultivating a **public image**
- Responsible for identifying leaders, **monitoring teams** and creating a conducive atmosphere

TEACHING ASSISTANT *[July 2011 till date]*

- Taught a batch of **40 students** in an introductory **physics** course
- Guided personally a batch of **weak students** in an introductory **computer science course**

WEB SECRETARY, HOSTEL 3 *[July 2011 - April 2012]*

- Designed a completely **new website** with chat bots and SMS information system for updates
- Conducted HTML5, CSS3, php and Javascript **workshops for hostel inmates**
- Awarded **Hostel Organizational Color** for my contribution towards hostel administration

SELECTED COURSES

Completed till April 2012	**To be completed by April 2013**
Core	**Core**
Design and analysis of Algorithms	Convex Optimization
Automata Theory and Logic	Artificial Intelligence(incl. lab)
Data Structures and Algorithms(incl. Lab)	Database and Information Systems (incl. lab)
Discrete Structures	Compilers(incl. lab)
Software Systems Lab	Computer Architecture(incl. lab)
Abstractions and Paradigms for Programming (incl. lab)	Computer Networks(incl. lab)
Logic Design(incl. Lab)	Operating Systems(incl. lab)
Computer Programming and Utilization	Embedded Systems Lab
Additional	**Additional**
Numerical Analysis, Signals and Systems, Controls and Communication, Data Analysis and Interpretation, Instrumentation Lab, Calculus, Linear Algebra, Differential Equations,	Analog Electronics, Literature, Digital Electronics

TECHNICAL SKILLS

Languages	C++, JAVA, Python, Scheme, Bash, AWK, SED
Web Technologies	HTML5, CSS3, JavaScript, PHP 4 & 5, SQL, AJAX, Django
Software	VIM, Code::Blocks, Spice, Eagle, Dreamweaver

EXTRACURRICULAR ACTIVITIES

TECHNICAL

- Awarded **Hostel Technical Color** for contribution to technical activities in hostel (2011-2012)
- Led a 3 member team to finish in top 50 in line-follower competition in Techfest (2010)
- Led a team of 4 towards building a maze-solving robot for Nexus in Techfest (2011)

OTHER ACHIEVEMENTS AND ACTIVITIES

- Completed Basic **Japanese** course (International Relations Office, IIT Bombay, 2010)
- Stood 1st in homepage making, group dance and foot painting competitions amongst freshmen (2010)
- Green Belt(4th out of 6 levels) in Karate(Shotorio Kai Kahn, 2004)
- Interests - trekking, endurance sports, fast paced games