

# Anish Mangal

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## INTERNSHIP OBJECTIVE

To gain technical expertise by way of research, in the vast field of Robotics and Computer Vision.

## EDUCATION

- Currently pursuing B.E. 5<sup>th</sup> Semester Electronics and Communication Engineering at Netaji Subhas Institute of Technology (NSIT), Sector 3, Dwarka, New Delhi, with over 75% aggregate in the first three semesters.
- IEEE student member: July 2006 - till date.
- Senior Secondary education (12<sup>th</sup>) at Delhi Public School, New Delhi affiliated to CBSE (Central Board for Secondary Examination) with 81% aggregate at AISSCE (All India Senior Secondary Certificate Exam.) 2003.

## TECHNICAL EXPERTISE

### Hardware Skills:

- Atmel AVR Microcontrollers (AtMega8,16,32, AtTiny13,45)
- Active filters, amplifiers
- Electronic Transducers
- Control circuits for D.C. and Stepper Motors
- R.F: Analog and Digital (Zigbee) Circuits
- Audio amplifier Circuits
- Display Driver Circuits

### Programming/Interface Languages:

- Visual C++ (Including Intel's OPEN CV library)
- C# .NET
- C/C++
- UNIX Shell scripting
- JAVA
- AVR-Assembly Language
- AVR-C
- MATLAB
- GSM AT Command Set

### Software IDE's and tools:

- Microsoft Visual Studio 2005
- Microsoft Visual C++ 6
- AVR STUDIO 4
- WinAVR and AVRGCC
- ORCAD Release 9
- APACHE TOMCAT 5.5.9 webserver
- Breve 3D simulation system

### Operating Systems:

- Microsoft Windows (95, 98, 2000, NT, Me,XP)
- Mandriva Linux 2006
- Ubuntu 6.06 LTS

## BRIEF DESCRIPTION OF PROJECTS

- **Internet Controlled Robot (ICR)** (version 1 complete)  
*Project Guide: Prof. D.V.Gadre, Asst. Prof., NSIT, Delhi*  
*Project Timeline: Jul 2005 – Jan 2006*  
A Mobile AVR based Robot capable of being controlled through the internet. Wirelessly connected to a server computer, using Xbee modules (Zigbee Standard), on which a JAVA servlet is running. Any user connected to the internet can simply log on the Robot's website and control its movements while watching a continuous video streamed wirelessly from the robot to the server. A bidirectional wireless Audio link is provided.
- **Object Tracking Robot(s)**  
(ongoing project)  
*Project Guide: Dr. Santanu Chaudhary, Electrical Department, IIT Delhi*  
*Project Timeline: Oct 2005 onwards*  
Multiple networked mobile AVR based robots, capable of detecting and tracking multiple objects. Control signals maintained by program in Microsoft Visual C++ making use of Intel's OpenCV library.
- **Navigation Aid for Visually Impaired**  
(ongoing project)  
*Project Guide: Prof. D.V.Gadre, Asst. Prof., NSIT, Delhi*  
*Project Timeline: Aug 2006 onwards*  
An acoustic distance based feedback system for the visually impaired. AVR microcontroller based, employing 40 kHz ultrasonic transducers and high frequency OP-AMP amplifier circuits.
- **Ultrasonic Distance Ranging Module**  
(ongoing project)  
*Project Guide: Prof. D.V.Gadre, Asst. Prof., NSIT, Delhi*  
*Project Timeline: Oct 2006 onwards*  
A low cost, low power ATtiny45 microcontroller based digital ultrasonic distance ranging module. A software based half-duplex UART is also provided to serially transmit the measurement data.
- **Rotary Shaft Encoder** (complete)  
*Project Guide: Prof. D.V.Gadre, Asst. Prof., NSIT, Delhi*  
*Project Timeline: Aug 2006*  
An extremely low cost, AVR ATtiny13 micro-controller based rotary shaft encoder using a micro stepper motor employing external interrupts and a software based half duplex UART.
- **Message Display Board** (complete)  
*Project Guide: Prof. D.V.Gadre, Asst. Prof., NSIT, Delhi*  
*Project Timeline: Apr 2006 – Jul 2006*  
AVR micro-controller based big message display board (16 rows by 96 columns) featuring a variety of scrolling types and real-time updating through GSM network. Front End developed in Microsoft Visual Studio 2005.
- **Traffic Density Management System**  
(ongoing project)  
*Project Timeline: Jul 2006 onwards*  
An algorithm to determine the traffic density in a video stream captured from a camera making use of Intel's OpenCV library.

## TRAINING

- **Winter Training** (Dec'05)  
Undergone four weeks winter training in college in PCB designing using ORCAD release 9 and MATLAB.

## ACHIEVEMENTS

- Won the *Distinctive Excellence* award in Circuit Cellar AVR Design Contest 2006 for Rotary Shaft Encoder sponsored by Circuit Cellar magazine and Atmel.
- Secured 34<sup>th</sup> Rank out of the 60,000+ candidates that appeared for CEE-2004, the annual entrance examination for undergraduate courses in NSIT and DCE.
- Awarded Merit Scholarship in college.
- 1<sup>st</sup> prize in AVR Challenge held at Innovision '06-07, NSIT
- 1<sup>st</sup> prize in the Original Hardware Competition for ICR at Innovision '05-06, NSIT.
- 2<sup>nd</sup> prize in the Pre-Defined Hardware Competition for Message Crawler at Innovision '05-06, NSIT.

## PRESENTATIONS

- A presentation titled '*USB: As Universal as the Power Plug*' in September 2006 as a part of curriculum.
- A presentation on '*i Wheel*', a rotary shaft encoder during Innovision 2006, NSIT
- A presentation on '*ICR: Internet Controlled robot*' during Innovision 2006, NSIT

## EXTRA CURRICULAR ACTIVITIES

- Good at Table Tennis, Badminton, Cricket
- Reading Books

## REFERENCES

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