

Neel Shah

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CAREER OBJECTIVE:

To work in the embedded systems domain, with special interest in hardware/software interfaces, simulations and micro-controller based automation towards improving the end-user experience.

EDUCATION

Master of Science in Engineering in Embedded Systems May 2013
University of Pennsylvania (Penn), Philadelphia, PA GPA: 3.56 (out of 4)

Bachelor of Technology in Electrical Engineering Jun 2010
Nirma University, Gujarat, India GPA: 8.41 (out of 10)

TECHNICAL SKILLS

Programming Languages: C, C++, Java
Simulation Tools: MATLAB, Simulink
Circuit Design CAD Tools: ORCAD 9.0, CADSTAR 9.2
IDEs: AVR Studio, Keil uVision, IAR Embedded Workbench, TI Code Composer Studio
Controllers: MSP430Fxxxx, MSP430FRxxxx, ATMEGAXx, LPC1768-ARM Cortex-M3
Software Testing tools: JUnit, Cobertura, muJava
Version control Systems: SVN, Git

CONFERENCE PAPERS

1. Akshat Kumar, Neel Shah, "Recent Developments in the area of Smart Grid", National Level Technical Symposium: Vidhyut Adbhutam, 2010.
2. Neel Shah, Amit Patel, "Design and development of a stepper motor control system for position control", International Conference on Current Trends in Technology (NUiCONE), 2010.

WORK EXPERIENCE

REAL TIME & EMBEDDED SYSTEMS LABORATORY, Penn, PA **Feb 2012 – present**

Research Assistant

- Turned an in-house RTOS, the nanoRK into open source by porting it on MSP-EXP430FR5739 (Texas Instrument)
- Built device drivers (e.g., ADC, PWM) for nanoRK on LPC1768 to interface various sensors and actuators
- Ported the RTlink protocol (an 802.15.4 protocol) for nanoRK on LPC1768 for wireless sensor networking.
- Porting the BACnet (Building Automation and Control network) to the Cortex M3 based NXP's LPC1768

DETKIN LABORATORY, Penn, PA **May 2012 – present**

Laboratory Assistant

- Designed custom prototype of various end-user micro-controller based electronic systems

AMBIMAT ELECTRONICS PVT. LTD., INDIA **Aug 2010 – Nov 2011**

R&D Engineer (Automation Division)

- Created a Bluetooth module (RFCOMM) communication for a stand-alone data trans-receiver
- Interfaced the AUBTM-20 transceiver and the ATMEGA16 and developed the code in BASCOM-AVR
- Designed UART interface between the XBee module (802.15.4 transceiver) and ATMEGA16 microcontroller

- Interfaced KINECT 360 motion sensor with the Arduino UNO board

SPACE APPLICATION CENTRE, INDIAN SPACE RESEARCH ORGANIZATION, INDIA

2008 – 2010

Intern - Intelligent position control system for a Directional Antenna

- Dec 2009 – Apr 2010: Developed a VHDL stepper motor based control system to maneuver the position of the antenna based on real time values
- May – Jul 2008: Developed MATLAB code for ADC ADS807 performance characterization from acquired measurements

ACADEMIC PROJECTS

- Built a cardiac pacemaker model that respond to the correct signal of the heart in the DDD mode and verified in UPPAAL. Using an extracted model as an oracle for closed-loop testing of any (physical) pacemaker design. Performed validation using assurance cases with ASCE
- Developed a smart light controller, which automatically modulates the light level of a room based on the number of occupants in that room. The automatic controller enabled 40% power savings by reducing light levels when the room was not fully utilized
- Developed a controller to maximize plant growth in greenhouse environments by automatically adjust light and sprinkler output
- Incorporated a robotic manipulator PUMA 260 to create a graffiti
- Programmed PHANToM Premium 1.0 via MATLAB to create a virtual haptic environment
- Programmed a custom beagle-board based mobile robot (using OpenCV library functions) to autonomously navigate a three-gate slalom course
- Designed a PID controller for stabilization and tracking control of an inverted pendulum.
- Designed a HVAC (Heating, Ventilation and Air Conditioning) test bed for verification of green scheduling algorithms.

REFERENCES

PRECISE (The Penn Research in Embedded computing and Integrated Systems) Center

University of Pennsylvania, USA

precise@seas.upenn.edu

Faculty: Rajeev Alur, Ph.D.

Insup Lee, Ph.D.

Rahul Mangharam, Ph.D.