

# CHINNIKRISHNA KOTHAPALLI

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## Education

**Master of Science in Electrical and Computer Engineering** **GPA: 3.7/4**  
(Sep 2012 - Present) Graduating Dec 2014  
Portland State University, Portland, OR.

**Bachelor of Technology in Electronics and Communication Engineering** **GPA: 72/100**  
(Sep 2007 - Apr 2011)  
Jawaharlal Nehru Technological University, Hyderabad, India.

## Experience

- **Research Assistant, teuscher.:Lab, Portland (Jan 2013 - Present)**  
**Project:** 3D FPGA by Self-Assembly.  
Using a novel computing structure called CellMatrix™ as an atomic unit, a 3D FPGA is implemented in this project.  
**Responsibilities:**
  - ★ Emulated CellMatrix™ concept using off-shelf IC's - PIC microcontroller(Assembly) and acetel nano FPGA(Verilog).
  - ★ Designed and tested CellMatrix™ cell in CMOS using cadence ICFB.
- **Scanning Technician, Disability Resource Center, Portland (Sep 2012 - Jan 2013)**  
**Project:** Alternative Formats Office.  
Provides alternate formats of textbooks like MP3, editable PDF, Braille etc... for disabled persons.  
**Responsibilities:**
  - ★ Interacted with customers on daily basis via phone,email and in-person.
  - ★ Scanned, edited and converted textbooks into the format requested by customer.
- **Android Developer, Sufoin LLC, Pennsylvania (May 2011 - Feb 2012)**  
**Project:** MorMeds™  
An automated prescription refill system for BlackBerry, Android and iPhone.  
**Responsibilities:**
  - ★ Developed Mormeds™ application for android platform from UI design to functionality implementation in Java.
  - ★ Maintained mail and web servers of Sufoin LLC.

## Tools And Languages

- **Programming Languages:** C, C++, Java, ASM for x86,MIPS,PIC,ATMEL AVR.
- **Scripting Languages:** Perl, Bash, Python
- **Hardware Description Languages:** VHDL, Verilog, SystemVerilog.
- **CAD Tools:** Cadence ICFB, Eagle for PCB Design.
- **Simulation Tools:** Modelsim, MATLAB, PSPICE, Mentor Graphics Veloce.
- **Synthesis Tools:**Synopsys Synplify, Xilinx ISE, Altera Quartus II.
- **Operating Systems:**Windows, Linux, Unix, Android.

## Projects

### 1. **Hardware Acceleration of Kalman filter on systolic array using Faddeev Algorithm (Sep 2012 - Dec 2012)**

Kalman Filter is an important data fusion algorithm. Most of the architectures developed for Kalman filter are specific to a problem and there is no generalized architecture. This is because the description of model used in prediction changes from problem to problem so are other noise matrices. We developed a more generalized architecture for hardware acceleration of Kalman filter on FPGA. In our architecture the matrices used for describing the model, are stored in a ROM. This gives the flexibility to change the matrices depending on the problem and allows the Kalman filter to reconfigure to the problem.

### 2. **Vision Based Complete Blood Cell Counter (Jun 2011 - Sep 2011)**

A complete blood cell counter is developed which uses blob detection and tracking to count RBC,WBC and blood platelets. A supporting neural network detects various cells and classifies them as RBC,WBC and Blood platelets. Compared to the existing technique of flow Cytometry this is very low cost as well as portable method for Complete Blood cell count. This idea is selected for Intel Embedded Challenge 2011.

### 3. **Human Computer Interface based on Image Processing (Jan 2011 - Apr 2011)**

A human computer interface (HCI) is developed as my final year project which allows user to interact with computers using natural gestures. A webcam tracks the gestures made by the user and recognizes them with the help of a Support Vector Machine (SVM) and performs the respective task such as clicking, zooming pictures, scrolling through albums etc

### 4. **USB Based Free Space Communication Device (Aug 2010 - Dec 2010 )**

Developed a USB based LASER transceiver using ATmega8 microcontroller with software emulation of USB protocol to communicate data between two terminals via LASERS.

### 5. **Content Based Image Retrieval using Graph Theory(Jan 2010 - Apr 2010)**

Implemented a CBIR system using MATLAB graph analysis toolbox for segmentation of the images.

### 6. **Chaotic Amplitude Modulation (Apr 2009 - Dec 2009)**

A simulation study is done in MATLAB to use chaotic signals generated from the Lorenz system as carrier signals to provide security to the message signal. This is then implemented on a TMS320C6713 DSP and a codec is developed for secure transfer of data.

### 7. **Course Projects**

Design of an Integrated Split L1 Cache System (Jan 2013 - Mar 2013)

Design of Tournament Branch Predictor (Jan 2013 - Mar 2013)

Wireless Sensor Data Acquisition System.

Spectrum analyser, FSK modem, mu law for companding using TMS320C6713 DSK.

Home control using mobile using GSM modem interfaced to ATmega32.

Accelerometer based USB mouse.

USB oscilloscope using the ADC of ATmega8.

Line Follower and MicroMouse robots.