

2. **Beamforming for a CMUT array**
Guide : Dr.Siva Rama Krishna Vanjari *Academic Project, IIT Hyderabad*
 Design a digital circuit to clock each element of a CMUT array to focus the generated ultrasound waves at the desired focal points.
3. **Wavelet vaguelette reconstruction for photo acoustic tomography**
Guide : Dr.Sumohana Channappayya *Academic Project, IIT Hyderabad*
 Reconstruction of image and reduction of the noise in image by applying wavelet vaguelette reconstruction method for photo acoustic tomography.
4. **Electromagnetic cloaking**
Guide: Dr.Zafar Ali Khan *Academic Project, IIT Hyderabad*
 Study and model the electromagnetic cloaking effects of metamaterials and propose an improvement in the cloaking of objects for visible light

Academic Research Projects

1. **Computationally Efficient Generalized Algorithm for n-D Determinant Computation.**
Guide : Dr.Amit Acharyya *Academic Project, IIT Hyderabad*
 Proposed an algorithm to reduce the number of computations for finding the determinant of an $N \times N$ matrix. Implemented the algorithm in Matlab and implemented the architecture in VHDL.
2. **Low complexity architecture for computing square root of a number.**
Guide: Dr.Amit Acharyya *Academic Project, IIT Hyderabad*
 Proposed an algorithm and architecture for computing square root of a number modifying the existing Newton-Raphson method. This was targeted at hardware implementation.
3. **Analysis and Implementation of LDPC codes for data transmission**
Guide: Dr.Zafar Ali Khan *Academic Project, IIT Hyderabad*
 The project focused on studying the performance of Low Density Parity Check (LDPC) codes and implementing it in Matlab using existing encoding and iterative decoding algorithms.
4. **Circuit solver using Image Processing**
Guide: Dr. Sumohana channappayya *Academic Project, IIT Hyderabad*
 Proposed an algorithm to analyze a circuit by processing the image of the circuit i.e. calculating current, impedance, etc. parameters using simple image processing techniques and implemented it in Matlab.
5. **Design of pulse meter**
Guide: Dr. Ashudeb Dutta *Academic Project, IIT Hyderabad*
 Made a pulse meter to measure the pulse of a patient. This was implemented using infrared sensor and the signal was processed on chip using a simple microprocessor.
6. **Design of 8-bit microprocessor**
Guide: Dr. Surya Sankar Dan *Academic Project, IIT Hyderabad*
 Designed a custom 8-bit microprocessor in VHDL. Implemented the basic arithmetic operations and register related operations using 8 bit commands.

7. **Quadra-pod**
Robotics Club

Club Project, IIT Hyderabad

Designed a four legged walking robot using servos and Arduino board.

8. **Propeller Clock**
Robotics Club

Club Project, IIT Hyderabad

Made a propeller clock using which works on the principle of persistence of vision. The clock was programmed using Arduino board.

Skills

Languages Known : English, Malayalam, Hindi

Computer Skills

Platforms : Windows, Linux

Languages : C, C++, VHDL, Perl, Python, Embedded C, Intel 8085(Assembly),
Linear Assembly

Tools : Matlab, LAMMPS, Synopsis Design Compiler, Modelsim, Cadence RTL
Compiler, Sage Math, Scilab, Xilinx ISE, PSpice.

Achievements

- Recipient of **Academic Excellence Award** from the institute for the year 2012.
- Selected for **Indian Academy of Science (IAS) Fellowship 2014**.
- Secured **All India Rank of 2722** rank in **IIT-JEE 2011 (99.5 Percentile)**
- Secured **All India Rank of 2812** in **All India Engineering Entrance Examination (AIEEE) 2011 (99.75 percentile)**.
- Secured **24th** rank in **State Level Engineering Entrance Exam 2011**
- Secured **11th** rank in **Cochin University Entrance Examination (CUSAT) 2011**

Extra-curricular activities

- Core Member of Robotics Club of IIT Hyderabad
- Core Member of Electronics Club of IIT Hyderabad
- Volunteered for ELAN 2011 – Cultural festival of IIT Hyderabad
- National Sports Organization (NSO) Badminton player

Declaration

I hereby declare that above information is true to the best of my knowledge and spirit.

Bastin Joseph