List of Current Undergraduate Projects
2014 - 2015

Title	Required knowledge	Required tools	Students	Project guide	Overview
Defective Heart Beat Pattern Recognition	Knowledge of image processing. Knowledge of electronics. Knowledge of C. Some knowledge of biology	MATLAB initially. May create hardware	Yamini Sharma Shubham Tayal Shubhangi Maheshwari	Sunil Bhooshan	Using image processing of the ECG signal, comparing the actual ECG to the ideal we can forecast a defective heartbeat
Wireless Data Transfer	Knowledge of EMT for antennas. Fundamentals of communication	MATLAB. Computers. Discrete components Microcontroller Workshop	Rafsan Ali Bhavuk Lalwani Shudhanshu Shekhar	Sunil Bhooshan	Using the serial port of a computer we transmit and receive data through antennas
Electronic Notice Board	Knowledge of microprocessors, microcontrollers. Digital communication	Harware. MATLAB. PROTEUS for simulation. Micro C. U-Vision for coding	Shivangi Aggarwal Archishman Latyan Vishal Patial	Sunil Bhooshan	Using a mobile phone connection we can display messages
Energy Harvesting Using Thermoelectric Materials	Basics of Electronics and Physics	Hardware	Aastha Afsar Rohit Chauhan Somya Verma	Shruti Jain	Selection and testing of the thermoelectric materials for TEG module; The performance and operational lifetime of TE modules
Design Of Digital Circuits Based On Reversible Gates	Digital electronics	SPICE, Verilog HDL	Deepali Naman Patel Aditya Gupta	Shruti Jain	A reversible circuit/gate (RG) can generate unique output vector from each input vector, and vice versa, that is there

					is a one to one mapping between the input and output vectors. There are different types of RG. Get the best RG and implement all logic gates using reversible gate.
Hand Gesture Recognition And Classification System	Image processing, Classification	Image Processing and Neural network tool of MATLAB	Mohammad Abbas Ruchita Gupta	Meenakshi Sood	Gesture recognition is a topic in computer science and language technology with the goal of interpreting human gestures via mathematical algorithms. Gesture recognition can be seen as a way for computers to begin to understand human body language, thus building a richer bridge between machines and humans.
Digital Image Steganography And Steganalysis	Image processing, Cryptography	Image Processing toolbox, MATLAB	Nitika Shipra	Meenakshi Sood	The major objective of hiding data using image steganography is to hide the data in an image, so that the changes in the intensity of the colours of image must not be visible to, human eye.
Accidental Prone System For Vehicles	Image Processing, Programming in MATLAB/Scilab, Embedded System	MATLAB/Scilab initially, May use Raspberry Pi	Ashish Singh Ashwin Singh	Ajay Kumar Agrawal	Using image processing the blinking of eyes detected and dependent on the time of blinking an alarm will be set to alert the driver. In the second phase using the same tools a non-owner could be identified to prevent the theft.
Automatic Climate Control System	Knowledge of various transducers and instrumentation. Knowledge of electronics,	Microcontroller programming using C. Transducer	Shikhar Tandon, Abhinav seth, Pankit Singla	Munish Sood	Using temperature, humidity sensors, comparing the actual parameter to the ideal through comparators, microprocessor a Air conditioner or a Fan

	Microcontrollers and Knowledge of C.	interfacing. PCB designing.			can be controlled.
Hand Gesture, Micro Controlled Robot	Knowledge of electronics, Microprocessors, Microcontrollers and Knowledge of C	Microcontroller programming Serial Port Communication PCB designing.	Venus Garg Mohit Patiyal Varun Maheshwari	Munish Sood	Using the serial port of a computer we Can control the movement of a robotic arm
Gsm Based Alcohol Detection System With Vehicle Control	Microcontroller & Its Programming, Knowledge of various Sensors, Knowledge about Alcohol Consumption Standard as per Motor Vehicle Act	GSM Module, Embedded C	Amulya Chauhan Karan Bir Singh Abhishek Singh	Pardeep Garg	Using the detector, the breathing rate will be identified and in case of violation of standards, the vehicle will be stopped. And the GSM technology will be used to inform the guardians of the driver.
Application Of Gsm Technology In Digital Lock	Microcontroller & Its Programming, Embedded Systems	Proteus, Keil, GSM Module	Siddharth Singh GauravMaheshwari Ashish Ahuja	Pardeep Garg	Using the GSM Embedded Digital Lock, the lock can be opened or closed remotely from anywhere.
Wireless Power Transmission	Knowledge of principles of electrodynamic induction	Keil software, Hardwire project	Kush Dhingra Ankit Kumar Kuldeep Singh	Vikas Hastir	Wireless transfer of energy takes place by electromagnetic coupling through a process known as mutual induction. If resonant coupling is used, where inductors are tuned to a mutual frequency, significant power may be transmitted over a range of many meters.
Tracking Of Visitors At Mass Events	Wireless communication, Wireless sensors	Keil software, Hardware project	Palash Gupta Chanderkant Sapaia Akshay Gautam	Vikas Hastir	At mass events, the visitors may be involuntarily tracked through wireless sensors and unauthorized access to prohibited areas can be monitored.

Talk To The Hand	Signal processing, Fundamentals of Image processing	MATLAB	Rahul Upathyay, Yashwant singh, Shivendra Raj Singh	Mohammad Wajid	Deducing various signs and letters from different palm gestures and converting it into equivalent human voice. In this firstly we are going to recognise simple palm gestures. But this would be limited to few signs only. So, we would combine palm gestures with movement. Initially we are proposing six movements i.e right, left, up, down, forward and backward. Coupling hand signs with different movements, we would finally get many possible combinations, and eventually each sign would be mapped to a unique letter of any given language (English for testing purpose). Additionally we would map simple signs to most commonly used phrases for communication.
From Remote Control To Smart Control	Signal processing,	MATLAB	Saurish Kar, Sherry Goyal, Aditya Thakur	Mohammad Wajid	Speaker recognition system using MFCC and Vector Quantization Model and recognizing a set of standard commands given by the user. Speaker recognition is the process of automatically recognizing a certain word spoken by a particular speaker based on individual in speech waves. This technique makes it possible to use the speaker's voice to verify his/her identity. The key is to convert the speech waveform to some type of parametric representation (at a considerably lower information rate) for further analysis and

					processing. This is often referred as the signal-processing front end. The feature set obtained can also be used to determine what has been spoken by the individual.
3-D Tracking Interface	Knowledge of programming, Knowledge of 3-D,Knowledge of embedded systems and basics of assembly programming	MATLAB, Microcontroller, ARDUINO BOARD, Hardware components	Sumangal Mangal Shruti Grover Harshita Solanki	Davinder S.Saini	Using difference in capacitance to track hand movements in space
Metal Detector Surveillance Robot	Embedded C programming, Embedded Systems, DTMF, VLF and BFO theory	ATmegaA16 Microcontroller, ATtiny Programmer, Atmel Studio, Eagle, Skype, PCB Drill Machine	Anchit Bhardwaj Gaurank Srivastava Akriti Saini	Davinder S. Saini	Decoding DTMF input to drive the motors; Skype for video transmission; detection of metal due to change in induction in coil ;
Automated Home System Using Touch Screen	• LANGUAGE- Embedded C And PIC, knowledge of electronics and electrical circuits	PIC,Touch screen,TEMPERAURE,Sensor,LDR,FAN,LIGHT,MOSFET	Sahil Goyal, Shikha chaudhry, Saif Ansari	Pradeep Kumar	Switching ON/OFF the loads without much human involvement.
Serial Data Transfer To A Pc Using 8051 Microcontroller	• LANGUAGE- 8051, knowledge of electronics and electrical	8051,RS232 I/O, MAX 232	Kartikey, Nirav, Anubhav	Pradeep Kumar	LONG RANGE DATA TRANSFER USING 8051

	circuits	DRIVER			
FPGA Implementation Of Md5 Hash Algorithm	Internet Security Protocol, Mat Lab ding, HDL coding, Interfacing with FPGA	MATLAB, XILINX, FPGA Kit	Anirudh Mehrotra Kushagra Goyal Abhinav Soni	Akhil Ranjan	Message Digest 5 (MD5) is one of the algorithms, which has been Specified for use in Internet Protocol Security (IPSEC). The input message may be large and is processed in 512-bit blocks by executing 64 steps involving the manipulation of 128-bit blocks.
Fabrication And Characterization Of High Performance MOSFET	Fabrication Steps, MOSFET Electrical Characteristics, VLSI process overview	COMSOL Multiphysics, Multisim	Palak Gaba Ankit Agrawal Ashna Jain	Akhil Ranjan	Fabricate different layers of MOSFET on the software and simulate its different characteristics. Based on that, analysis will be done to improve the performance of MOSFET.
Coverage In Wireless Sensor Network	Knowledge of Wireless Communication and Sensor Network	MATLAB	Simarpreet Singh Aman Pathak Siddarth Sharma	Kaushlendra Kumar Pandey	Among several research challenges coverage problem significantly affects network performance, which defines how well a sensing area is monitored by the sensor nodes. The objective of this project is to keep optimal number of nodes active while ensuring complete coverage of the network
Automatic Traffic Estimation And Road Surveillance Using Image Processing	Basic knowledge of Digital Image Processing, MATLAB	MATLAB	Ankit Mamgain Saurabh Srivastav Mehak Goyal	Pragya Gupta	This project will aim to prevent heavy traffic on roads by estimating the traffic on roads and road conditions using digital image processing.

Estimation Of Ripeness Level Of Fruits	Basic knowledge of Digital Image Processing, MATLAB	MATLAB	Tanvi Mehra Mohit Mahajan Akansha Tripathi	Pragya Gupta	Aim of this project is to sort the mature fruits from the immature ones, Testing of fruits on basis of shape, maturity level (%) and Detecting the diseases in the fruit using different image processing algorithms.
Hardware And Software Implementation Of Line Codes	nowledge of Communication, Software and Hardware	MATLAB, pSpice, VHDL	Abhishek, Hemant	Tapan Jain	Line coding consists of representing the digital signal to be transported by an amplitude- and time-discrete signal that is optimally tuned for the specific properties of the physical channel (and of the receiving equipment). The waveform pattern of voltage or current used to represent the 1s and 0s of a digital data on a transmission link is called line encoding. The common types of line encoding areunipolar, polar, bipolar, and Manchester encoding.
Wireless Sensor Networks	Knowledge of Digital Communication, Wireless Communication, Software and Hardware	MATLAB, Code Composer Studio (CCS)	Ajeet, Sandeep, Shubham	Tapan Jain	Mathematical Analysis of Short and Long Path in WSN in terms of Routing, Delay Reliability, Collision etc.
Programmable Muscle Stimulator For Paralytic Patients	nalogue Electronics, Digital Electronics, Communication systems, Microcontrollers.	oftware Tools: PSpice, Keil, OrCAD lardware Tools: Apparatus for constructing and testing the	Veda Dharela Anmol Lakra Aditya Arun	Vanita Rana	A programmable Muscle stimulator operated by a microcontroller to provide temporal recovery from paralysis. Generation of programmable current pulses to meet the requirements demanded by the seriousness of the muscle defect.

		experimental circuits. (Bread board, Digital multimeter, CRO, Regulated power supply, Programmer Kit)			
Staircase Power Generation Using Piezoelectric Transducers	Analogue Electronics, Digital Electronics, Microcontrollers.	Software Tools: PSpice, Keil, OrCAD Hardware Tools: Apparatus for constructing and testing the experimental circuits. (Bread board, Digital multimeter, CRO, Regulated power supply, Programmer Kit)	Malay Tripathi Anchal Gupta Neha Jaiswal	Vanita Rana	Design of a low cost piezoelectric generator that harvests Mechanical vibrations energy available on a Staircase.
Classification Of Liver Tissue Based On Histological And Imaging Features	owledge of Image Processing and Data Mining Techniques	MATLAB ImageJ WEKA MS-Excel	Shrestha Bansal Gaurav Chhabra Sarat Chandra	Jitendra Virmani	To develop a hybrid CAD system for Liver Disorders using Histological features and Imaging Features.
Application Of Machine Learning Algorithms On Benchmark Medical Datasets	owledge of Feature Selection and classification Techniques	MATLAB WEKA MS-Excel	Archit Mittal Pulkit Saxena Yugander Krishan Singh	Jitendra Virmani	To develop and compare the performance of CAD systems for Diabetes dataset, ECG dataset and Mammographic Masses Benchmark datasets.

Detecting Forest Fire Using Wsn	nsor, actuators and interfacing hardware. Graph theory and networkin	MATLAB and Simulink, LabVIEW	Harshit Sharma Saurabh Prabhakar Sahil Sharma	Rajiv Kumar	To develop a system that uses the technique of wireless sensor network to detect forest fires.
Fault Analysis, Identification, Recovery And Tolerance In Network	OSI Model, puting, Network management	twork Simulator, sco Packet Tracer	Sagar Malik Nishant Ranjan Ankit Kumar Jajodia	Rajiv Kumar	Network failure may invalidate the control policies and degrade the performance of network. Propose work shall analyse and simulate the network faults.
Voice Controlled Moving Chair For Physically Disabled	Knowledge of microcontroller	MATLAB initially. May create hardware	Vivek Kumar Saurabh Pal Kuldeep Naruka	Neeru Sharma	The aim is to design a wheel chair which can move by receiving voice command.
Automated railway controlled gates.	Knowledge of microcontroller	PSpice and PROTEUS	Akanksha Harjai Sanya Gupta Nikhil Goyal	Neeru Sharma	The aim is to design a system which can automatically avoid collision between two trains by switching the track.
Home Based Security System	Knowledge of microcontroller	Keil software	Lokesh Singla	Neeru Sharma	An alarm rings in case of sudden fire. Also tracks the foot movement.