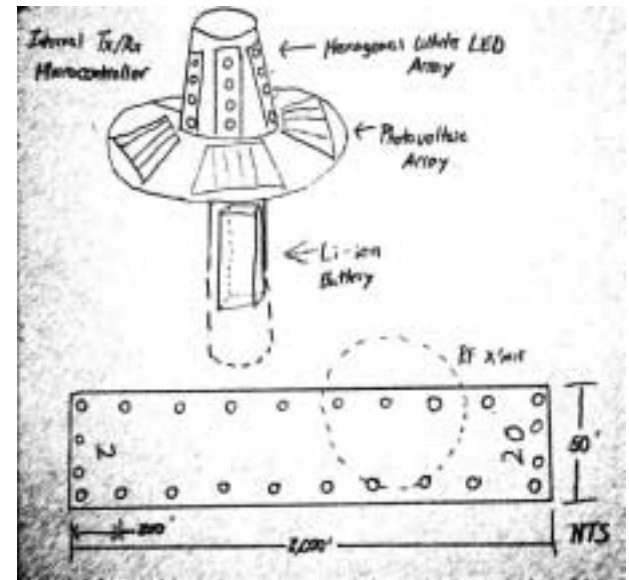


Wireless High-Intensity Runway Lighting

- Runway lighting is required to land an aircraft at night.
- Small grass airfields cannot afford to install/maintain wired lighting.
- Solution is to implement **solar powered, wireless, pilot controlled** high intensity runway lights.
- Will use Hexagonal array of High-Intensity White LEDs, bright, long-lasting, low power consumption.
- **Photovoltaic array** to charge internal Li-ion battery.
- Short Range, **Low Power RF Transceiver** to ping activation signal to nearby lights.
- **Internal Microcontroller** to operate transceiver and time-out function.
- Linked to base unit with air-band receiver for pilot controlled light activation based on microphone clicks.



Background and Qualifications:

- **Instrument Rated Private Pilot**, have immediate need for this system at Cambridge Hilltop Airport (2OA6), a 2,100' x 50' grass strip.
- Experienced Electronics Technician—have operated own audio electronics modification firm **SACDmods.com** for past 5 years. Can solder surface mount components and fabricate requisite assemblies.
- Knowledge of Microcontroller programming: ECE265 and FEH Robot Design Competition.
- Completed classes on circuit design: ECE323, 327, 624 (power electronics), 722 (analog design).
- Studied RF systems: ECE311, 312, 710.
- Experienced systems integrator.



Technical Project

OSU Rocket Guidance System

Objective: Design a control system that will maintain a vertical rocket trajectory and perform an autonomously guided parachute landing for the OSU Rocket Team.

Design Requirements:

- Project must meet TI Design Contest requirements.

Topics of Research

- Inertial Navigation Systems
- Global Positioning Systems

Background

- Fifth year Electrical and Computer Engineering student
- Professional and academic project experience
- Related Course Work
 - Control and Digital Signal Processing: ECE 351, 352, 551, 600
 - Digital Logic and Design: ECE 261, 265, 561
 - Computer Interfacing and Protocols: ECE 766
 - Computer Programming: CSE 201, 221, 222, 321, 560

Technical Project

- **Wireless Sensor network**
- Use sensors to transmit and receive information in a network
- Communicate with other networks and constantly poll/monitor data
- Ultimately relay information and control devices/applications with integrated wireless capabilities

Background or Qualifications:

- Communication Specialization
 - 501*, 508*(Communications lab), 600*(DSP), 620, 721, 561, 567
- Undergraduate research in Wireless Sensor Networks
- Proficient in C++, SQL
- Strong interest in wireless communications and desire to learn more in this field

ECE 582

Girish Balakrishnan- 2





Technical Project



Ohio State Rocket Team: Project Prometheus

•Project Overview

- Design an electronics system that controls a rocket flight path after launch and returns the airframe and cargo safely to a designated location.
- TI Design Contest entry (\$\$\$)

•Sensor Network

- Accelerometers and Gyroscopes measure position and orientation. Data checked with GPS input.
- Sensors feed to a TI Microcontroller programmed in Assembly Language/C/C++

•Control

- Airbrake Flaps on airframe to create drag to control flight

•Fun Facts

- Airframe ~20 feet tall, 8 inch diameter
- Airframe design has been modeled and calculated to reach 125,000 ft
 - ~23 miles (Astronauts get wings at 50 miles)
- Aluminum reinforced carbon fiber airframe with titanium nosecone.

Background or Qualifications:

- ECE: Computer Specialization (Resolve/C++)
- OSU Rocket Team Avionics Lead
 - Few months of design work completed.
- OSU Solar Car Team
 - Control using Simulink/MATLAB (faculty collaboration)
- Digital Classes with Dr. Orin
 - Completed a few ardware programming courses
 - 265, 567, 551, 667, 662

Technical Project

- Wireless portable dog fence
- Have a given radius that dog could travel
- When nearing max range a tone would sound, once outside the max range the dog will get shocked
- Could replace systems that use underground wires to create outer boundaries
- Marketable

Background or Qualifications:

- ECE 323 and 720 with Prof. Bibyk
experience with TopSPICE
- Hard worker

Technical Project

Temperature sensors

Uses:

- Processor Temperature Monitoring
- Central Office Telecom Equipment
- Storage Area Networks

Background

Courses Taken

Electromagnetics: ECE 614

Circuit: ECE 327, 620

Power: ECE 447, 740

Communication: currently taking ECE 600

Co-op Experiences: Verizon & AEP

Engineering Related Project- Circuit Breaker
Control Replacements

ECE 582

Megan Chung- 2



Design Project

- Power Industry Oriented
 - Design optimal performance of power system/grid
 - Design fault detection system for Transmission/Distribution
 - Design system with more end-user interaction; individual power units, etc.

Qualifications:

- Multiple internships with AEP
 - Experiences include construction strategies and PLC design/maintenance
 - Worked with a team of mechanical, electrical, and chemical engineers
- Specializing in Power and Controls
 - Courses include 447, 551, 557, 620, 643, 740, 776.01
- Experienced in working with teams, and extremely dedicated to outperforming in competitive settings
- Busy schedule (18 ECE hrs, TA for Math 148- two sections, IEEE, HKN, TBP) but will do anything to get the job done

Design Project: Preventative Sanitation

Overview: Wireless sensors strategically placed to determine supply of soap and paper towels while also alerting base station of spills and clogged toilets.

Emphasis On:

- Wireless communication
- Analog-to-Digital Conversion
- Power Conservation
- Keeping public bathrooms clean for everyone!

Andrew's Personal History

Antenna Design

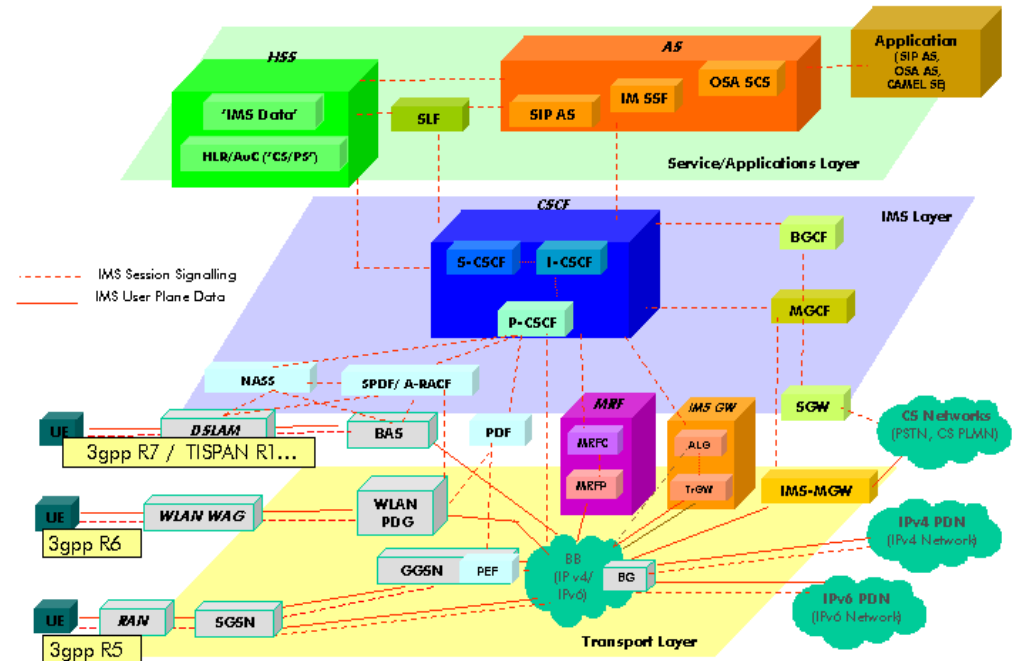
Communications

- Completed courses in *Circuits* (620, 720, 721) and am currently taking classes in *Signals* and *Signal Processing* (600, 501, 710)
- First used a computer in 1989 (286 processor) to play inspiring games such as Mother Goose and Captain Comic



Technical Project

- IMS (IP Multimedia Subsystems)
- Worked on my own
- Learned many new things



Background or Qualifications:

- 4 years of classes
- Classes range from Programming to circuit design
- I am a problem solver

VLSI Project

VLSI is the field which involves packing many logic devices into smaller areas.

- Designs are usually classified to 3 categories:
 1. Analog
 2. ASICS or Application Specific Integrated Circuits
 3. SoC or Systems on a chip
- 582 work
 - Learn Cadence toolset: Schematic Capture; Transistor simulation; Basic Layout
 - Learn concepts of timing and fan-in and fan-out
 - Learn how digital VLSI circuits distribute on Silicon Area and design on an efficient circuit layouts.

Background or Qualifications:

Courses in Circuits:

- ECE 323 with Professor Bibyk
- ECE 722 with Professor Ismail
- ECE 327: Circuit Lab experience

Experience with TopSpice simulation, Circuit design, Xilinx, M68HC11 simulator and Matlab.

Specializing in Communications/DSP and Computer Engineering Work Experience:

- Internships at General Electric, Roper, 2007.

Technical Project

TI Design Contest

- Use 3 different TI analog parts
- Amplifiers, RF, Temperature sensors, DSP's, etc...
- Wide variety of possible project ideas that work
- Have to be creative, original, and have quality work

Background or Qualifications:

Course work in

Comm (ECE600)

Circuits (ECE721)

EM (ECE711)

Computer (ECE561, 662, 763)

Experience

12+ months of engineering experience from co-ops and internships

Availability

-Taking 21 hours, weekends and most afternoons free

TI Analog University Program Design Contest

Objectives

- Design analog circuit using suggested ICs made by TI (probably temperature sensors and timers)
- Get hands on experience in analog design
- Improve understanding of analog circuits.

Background or Qualifications:

- Taken 721 (SP07), 722 (AU07) ,327
- Specializing in circuits and computers
- Good documentation, organizational and project management skills

Technical Project

Texas Instrument Analog Design Contest

- use 3 different TI analog chips in the circuit

Project interests

- RF, MSP430, Power Management
- Utilize Bluetooth wireless capabilities
- Automotive Industry

Background or Qualifications:

Courses

- Specialization in E-Mag and Power
- Some related: ECE501, 517, 567, 614, 647, 710

Experience

- Recently designed/tested Low Pass filter using stubs with microstrips.

Programming Skill

- Matlab, ADS, C++

Technical Project

VLSI Cell Design Project

- Goal: Design a cell for the OSU digital library.
- Learn the basics of designing circuits
 - Use Cadence to layout schematics
 - Test and verify design
 - Eventually the design will be made into a working chip at the end of Spring quarter.

Background or Qualifications:

- Has an interest in Photonics & Electronics and VLSI processes.
- Has taken ECE 432, ECE 734 and currently taking ECE 637
- Already has knowledge of how transistors are formed on a wafer
- Worked on circuits over the summer

Technical Project

-TI Design Project

- Build Upon and Implement IC Analysis and Design Concepts
- Create Innovative, Quality Design in a Professional Environment
- Must Use at least 3 TI Analog ICs
 - Includes Amplifiers, Clocks, Data Converters, RF
- Must Also Use Creative Technical Writing Skills

Background or Qualifications:

-Worked for Belmont County GIS Office

- programming and data entry for 911

-Worked at First Energy

- Shadowing electrical engineers, learning how plant operated

-Currently working under Professor Kasten for ECE Department

- Designing and programming interactive classroom modules for power classes

-Specializing in Power and Control

- Classes taken include: 341, 447, 740 (Power)

- 551, 557 (Control)

- Also proficient in Adobe Photoshop and other graphic design software



Technical Project

TI Contest

- Analog Design Project
- Use of various electrical components:
 - Amplifiers
 - Clocks and Timers
 - Data Converters
 - RF
- Critical ECE fields
 - Circuits
 - Control

Background or Qualifications:

- ECE Coursework
 - Communication/DSP: 600, 650, 675
 - Electromagnetics: 517, 614, 710, 715
- Industry experience in AutoCAD design and implementation of various electrical systems
- Interested in Analog Design
- Reliable and creative team player

Technical Project

Objectives:

- Household controls both locally and remotely.
 - Turn lights on and off if a room is entered or exited.
 - Turn on heat or AC remotely.
 - Close garage door and lock doors after certain time.

Goals:

- Decrease power consumption, lower utility bill.
- Increased security.
- A comfortable family is a happy family.

Background or Qualifications:

- Knowledge with setup and security of home network.
 - Setup home computer network with 5 computers (2 wireless).
- Sensor network experience, work experience familiarity with various systems (engine, transmission, ABS, etc.).
- Interested in hardware control, programming (C++, Maple, MatLab), and sensors.
- Works well in groups, motivated, gets work done on time.

Technical Project

- VLSI Design
 - Use CADENCE to design transistor layout and schematic
 - Design most efficient VLSI circuit
 - Understand VLSI fabrication process
 - Fabrication of transistors, resistors, capacitors, amplifiers and switches

Background or Qualifications:

- **Related Courses**

- **Control: 551, 557, 730**
- **Solid State: 432, 734, 732, 637**
- **Power: 643, 447**
- **Circuits: 620**

Plan on taking ECE 720 in WI/08

I enjoy learning and am a reliable team member

Technical Project

VLSI RF design

- Objective:

Design and build VLSI chip to use RF technology

- Involves:

Use Cadence or TopSpice for chip design

Use VLSI block diagrams for fabrication process

This project pertains to me because I have slight experience with RF and VLSI design

Background or Qualifications:

- I have taken ECE 721 with Prof. Bibyk
 - I have an understanding of what Prof. Bibyk wants in a report
 - I have experience with VLSI Design
- I wrote software using RF
 - I have experience talking with a signal generator programmatically
- I have experience in many software languages

OSU Rocket Team Project

- Objective: Autonomous Control of Rocket's Flight Path
- Install all necessary sensors and measurement equipment on the rocket
- Design control system
 - First, just to correct rocket's flight path during ascent
 - Next, design landing guidance system
- If using TI equipment, can also enter in TI design contest. For instance, TI microcontrollers might be a good design solution.

Background or Qualifications:

- Coursework and Experience

- Control Courses (ECE 551, ECE 557, ECE 752, currently enrolled in ECE 750)
- Microcontroller Courses (ECE 265, currently taking ECE 567)
- Others classes that may benefit (ECE 711, ECE 614, ECE 561, ECE 351, ECE 352, ECE 323)
- Experience programming microcontrollers using both C and assembly language.
- Internship experience programming PLC's at a Honeywell plant.

Technical Project Proposal

Design of Rocket Guidance Control System

- Learn to use TI microcontrollers
- Determine in-flight system characteristics
- Develop feedback control system to achieve vertical flight
- Implement servo-motor flap control and various feedback sensors (attitude and position)

Background or Qualifications:

- Have programmed in C, C++, and some VHDL
- Great deal of robotics experience
 - President of OSUFIRST Robotics team
 - Worked in ER4 Robotics Group at NASA Johnson Space Center
 - TA for Fundamentals of Engineering Honors Program
- Comfortable with circuitboard schematic capture and layout with OrCAD and Altium Designer
- Majoring in controls, computer, and electromagnetics

