age@princeton.edu
(713) 517-4920

ANDREW GE

andrewge.me
github.com/andrewge8622

EDUCATION

Princeton, NJ   **Princeton University**   **June 2019**
- B.S.E. in Electrical Engineering, June 2019. GPA: 3.8/4.0, Major: 3.9/4.0
- Minors in Computer Science, Robotics and Intelligent Sensing
- Relevant Coursework: Electronic Circuit Design; Digital Logic Design; Electronic Devices; Wireless and High Speed Integrated Circuits; Information Signals; Computer Architecture; Algorithms and Data Structures

EMPLOYMENT

EE Intern - Hardware   **Intuitive Surgical**   **Summer 2018**
- Designed boards utilizing wireless power transfer, high speed video, serial comms (I2C, SPI, UART), etc.
- Performed schematic capture and layout for 8 PCAs; led design reviews for each board
- Individually took PCAs from product specification through verification and validation
- Optimized designs to reduce power consumption, heat dissipation, layer count, and component density

EE Intern - Firmware   **Intuitive Surgical**   **Summer 2017**
- Developed modules in Verilog to automate I2C polling and error recovery (hung bus, NACK, etc.)
- Generated comprehensive testbenches in SystemVerilog; simulated and debugged in QuestaSim
- Built modules on Xilinx FPGA, led bring-up of time-of-flight sensors using module
- Eliminated need for MicroBlaze core on certain FPGAs, reducing power and freeing system resources

Research Assistant   **Princeton University Physics Department**   **Summer 2016**
- Developed tracking system to simulate light beam paths in Python
- Built silicon photomultiplier photon annihilation detector system, including 3D printed crystal mounts
- Debugged detection of cosmic rays and photon annihilations using DRS4 oscilloscope

Student Grader   **Princeton University CS Department**   **Fall 2016 – present**
- Evaluated student programs and provided feedback for introductory computer science course

TECHNICAL EXPERIENCE

- **Heartbeat Sensor:** Designed a piezo vibration detector to pick up heartbeat. Used op-amps to process signal, and ultimately flash an IR LED. Modified a webcam to record IR wavelengths, and coupled with OpenCV to extract heartbeat from video data collected during sleep.
- **Drone landing platform:** Built an omni-drive robot platform equipped with PixyCams to detect a flying drone. Featured steering control algorithms so that platform would locate drone, mirror its movement from the ground, and catch it upon landing, without any communication with the drone.
- **Line following car:** Using the chassis of an RC car, built an autonomous line following robot to drive around a self-crossing track at constant speed. Used a CMOS image sensor for line detection, with video processed using both analog and digital components. Designed and tuned PD controller for steering and PI controller for speed. Digital components implemented on Cypress PSoC 5LP.
- **PU Computer:** Programmed, tested, and implemented a 16-bit, Turing complete microprocessor. Coded in Verilog, implemented on Artix-7 FPGA.

SKILLS

- PCA Design: schematic capture (OrCAD, Cadence Virtuoso, EAGLE), layout (Allegro, EAGLE)
- CAD: Autodesk Inventor, PTC Creo 4.0, SolidWorks CircuitWorks
- Circuitry: Digital/analog circuit design, HSPICE/LTSPICE, oscilloscopes, SMD soldering and rework
- Programming: Java, C, C++, Python, Matlab, Verilog
- FPGA programming experience: Vivado, QuestaSim, iVerilog

EXTRACURRICULARS

- Princeton Racing Electric, Electrical Subteam – PCB designer   **Fall 2017 - Present**
- 3D Printing Club – Print Leader   **Fall 2017 - Present**
- Princeton Autonomous Vehicle Engineering, Mechanical Subteam   **Fall 2015 – Spring 2017**