

# Yatong Bai

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## EDUCATION

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### University of California, Berkeley

Ph.D. in Controls

- Interested in convex optimization
- Advisor: Somayeh Sojoudi

Berkeley, CA

*Aug 2020 – Aug 2025 (Expected)*

### Georgia Institute of Technology

B.S. in Mechanical Engineering; B.S. in Computer Engineering

- Double major, GPA: 4.0 / 4.0

Atlanta, GA

*Aug 2016 – Aug 2020*

## RESEARCH & WORK EXPERIENCE

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### University of California, Berkeley

Prof. Somayeh Sojoudi's Research Group, Graduate Student Researcher

Berkeley, CA

*Aug 2020 – Present*

### Honda Aircraft Company

Flight Control Intern

- Part and assembly design of flap control system in CATIA;
- Performed structural stress finite element analysis (FEA) to ensure safety factor;
- Dynamic modeling of flap control linkage system in MSC ADAMS: evaluated deflection, force, kinematics;
- Wrote a MATLAB script to model the tolerance stack-up of position sensors in the flap control system;
- Defined flap skew & asymmetry warning threshold and designed the flap control logic in MATLAB.

Greensboro, NC

*May 2019 – Aug 2019*

### Tesla, Inc.

Dimensional Engineering Intern

- Created a VBA script that converts CATIA simulation models to VSA simulation models;
- The script transferred all geometric features and tolerances by array manipulations;
- Modeled the tolerance stack-up (GD&T) of the pedal box assembly to validate its manufacturability using Siemens VSA.

Palo Alto, CA

*May 2018 – Aug 2018*

### Georgia Institute of Technology

TINKER Research Group, Undergraduate Student Researcher

- Debugged shell and C++ code to compile SPEC 2017 Benchmark into ARM binary files using GCC-ARM on Ubuntu Linux;
- Used Gem5 simulator to convert these binary files into debug trace files;
- Wrote a Python script to parse the debug trace file for the simulation of an experimental ARM computer architecture.

Atlanta, GA

*Aug 2019 – Oct 2019*

RoboMed Research Group, Undergraduate Student Researcher

- Designed and soldered PCB breaker board in KiCad for a pressure sensor; used an Arduino to obtain the pressure data;
- Soldered three Electromagnetic trackers to a PCB and used them to reconstruct central catheter position with MATLAB.

*Jan 2019 – Apr 2019*

Prof. Meaud Research Group, Undergraduate Student Researcher

- Created an input GUI (Graphical User Interface) using MATLAB App Designer for cochlear dynamics simulation software;
- The GUI was able to adjust simulation settings, control the simulation software, create batch files, and save log files;
- Created a data-display GUI to load, process, and graphically display simulation data (5-D array).

*Jan 2018 – Dec 2018*

## **OTHER PROJECTS**

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### **Machine Learning Algorithm for Musical Instrument Classification**

*May 2020 – Aug 2020*

- Improved an algorithm that predicts music instruments (violin, cello, etc.). > 90% accuracies for some test music pieces;
- Written in Python; obtains feature vectors using MFCC and performs classification using Support Vector Machine (SVM);
- <https://github.com/Bai-YT/CS4641-Music-Instrument-Recognition> .

### **Avionics and Test Stand Software for Monocopter**

*Jan 2020 – May 2020*

- Implemented the avionics control algorithm of a “monocopter” using Arduino (C++);
- The avionics processes magnetometer readings to calculate heading with very low noise and drives actuators accordingly;
- Implemented a PID speed control and state-estimation code for a spinning avionics testbed using Mbed (C++);
- The avionics testbed spins at the user-specified speed, reads an encoder, and sends the true heading to the computer.

### **AC Motor Position Control**

*Aug 2019 – Nov 2019*

- Performed system identification of an AC motor (PMSM); implemented trajectory-following state-space position control;
- The C++ code generated 3-phase PWM sinusoidal voltages and achieved fast settling time and minimal overshoot.

## **SKILLS**

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- **Background:** embedded systems, controls, machine learning, dynamic simulation, FEA, tolerance (GD&T), signal processing, PCB design
- **Programming:** C, C++, Python, MATLAB, Excel VBA, VHDL, Java, LabView, Simulink
- **Engineering Software:** CATIA, Solidworks, KiCad, Eagle, ADAMS, Teamcenter, Quartus