# Xiangyu Liao (Frank)

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## *SUMMARY*

To obtain a full-time position working as a Mechanical Engineer. Available from June 2016.

- Specialized in 3D CAD modeling, FEA, GD&T, Mechatronics Design, and Design for Assembly/Manufacturability.
- Proficient in engineering analysis of Mechatronics Systems, Optical Systems, and Electromechanical Systems.
- Skilled programmer in MATLAB, LabVIEW & Python able to perform complicated calculation and Object Oriented Programing.

## *EDUCATION*

**University of California, Berkeley** Expected 05/2016
Master of Engineering in Mechanical Engineering (Product Design) **GPA**: 3.8/4.0
**Beijing Institute of Technology (BIT)** 07/2015
Bachelor of Engineering in Mechanical Engineering **GPA**: 3.85/4.0

## *RELEVANT EXPERIENCES*

**Mechanical Engineer – *Capstone Project, Optical Zoom for Smartphone Camera,* UC Berkeley** 09/2015 – Present

- Engaged in the design & prototyping of a smartphone camera module capable of 5x optical zoom without compromising the resolution of the photos.
- Designed the camera's actuation mechanism - the periscopic structure & arrangements of the lenses, coils, magnets (Voice Coil Motor Actuation), and CMOS sensor, with a stroke of 25mm-30mm and a depth of 6.2mm.
- Performed magnetic field simulation on *ANSYS Maxwell* to calculate the magentic flux & forces exerted on the coils and magnets, and determine the required magnetic flux and turns of coils for the system.

**Intern Product Design Engineer - Guangzhou Institute of Electronic Technology, Chinese Academy of Sciences (CAS)**
*Engaged in the design team of **desktop 3D printer*** 05/2014 – 08/2014

- Designed the injector nozzle holder of the printer in detailed CAD model on *Inventor*, conducted finite element analysis (FEA) on *ANSYS* to determine the stress distribution of the nozzle holder and proposed material (PETE) for its manufacturing.
- Tested the printer's performance by identifying defects in various printed structures and reported to the quality control team.
- Optimized the printer nozzle's tool path (G-code) generation algorithm and successfully reduced the printing time by 10%.
- Participated in the development of product's marketing strategy and briefed SWOT analysis of the printer.

**Design Specialist – *Mechanical Design Competition*, Beijing Institute of Technology** 10/2013 – 01/2014

- Designed a two-stage cylindrical gear reducer for a tableting machine to reduce the driving motor speed of 1500r/min down to the desired output speed of 25r/min.
- Managed the project to reach higher reliability and robustness, including detailed CAD model on *Inventor* and stress & strain calculation for gears, bearings and shafts using *MATLAB*; selected material for gears (AISI 4620 Steel) and shafts (1045 Steel).
- Determined the reducer's life cycle (10 years) based on fatigue analysis and documented design specifications.
- Won the Best Shape & Structure Design Prize among 80 contestants.

**Mechanical Engineer - *Mechatronics Design Project - Mechanically Assisted Spring Shoes*, UC Berkeley** 01/2015 – 05/2015
*Project Website:* http://courses.me.berkeley.edu/ME102B/Past_Proj/s15/Team%2023/

- Contributed to the design & prototype of a mechanically assisted spring shoes embedded with a stepper motor, gear assembly, transmission mechanism, springs, and circuit-control logic (using *Arduino*).
- CAD modeled on *Solidworks*, selected proper materials for each part, machined & assembled the prototype.
- Tested & optimized prototype's control algorithm and transmission mechanism, achieving a boost of 6in for a mass of 45lb.

**System Engineer - *Solar Hybrid Power System Design Project*, UC Berkeley** 03/2015 – 05/2015

- Designed an innovative solar hybrid power system integrated with a thermoelectric module that captures waste heat from PV cells, which generates electrical power for NASA spacecraft systems.
- Built up heat flow model in photovoltaic cells (PV Cells) & thermoelectric module and determined the optimal arrangements.
- Calculated values of crucial system parameters (temperatures, voltage, current) on *MATLAB* under specified solar flux input.
- Analyzed & optimized system performance including net power output and efficiency, successfully boosted the efficiency from 18.8% (for conventional solar PV cells without thermoelectric module) to 35.6%.

## *TECHNICAL SKILLS*

- **Tools:** Inventor, AutoCAD, SolidWorks, ANSYS, MATLAB and Simulink, SQL
- **Programming:** MATLAB, LabVIEW, Java, Python, C