Opening Remarks

An engineering students' path is typically molded by their course curriculum, extracurriculars, and general milestones like landing an internship/co-op/leadership position. With great weight and emphasis being put towards landing an internship or co-op, it can be very daunting to go into the summer without one of those positions lined up. However, experiences are valuable regardless of whether they are tagged to an official position. As Engineer Peer Academic Advisors, we want to supply a list of possible summer projects students without internships/co-ops can pursue to supplement their experiences and identities as engineers. Experience is experience and we hope that this document inspires our peers to begin personal projects that allow them to be creative and align with their interests.

About this Document

This document is broken down into different categories based on the projects' main focus. The end of the document will target other opportunities for you to gain experiences beyond projects.

General Recommendations

We recommend that you document every step of the process and compile the information and your descriptions/commentary onto a document or website to begin building our e-portfolio. For more information on e-portfolios, please look at the following resources curated by current and past peer academic advisors:

1. [E-Portfolio Video](#)
2. [Creating E-Portfolio Resource Doc](#)

Project Ideas

I. 3D Modeling / Computer Aided Design

    A. SolidWorks: free education license - build

        1. GrabCAD Community

        2. GrabCAD and Dropbox functionality

        3. Using FIRST Robotics Competition Design challenges (robotics)

        4. Create a design/modeling portfolio

        5. Ideas to model:

            a) Your favorite instrument

        b) Your computer

        c) A car/racecar/bus/forklift/bike/motorcycle/rocketship

        d) Your favorite character in a movie (Wall-E, Eve, Lightning McQueen)

        e) Music box

        f) Structures/Buildings/Art Installations

        g) Robotic arm

        h) Medical Devices

        i) Get creative!

B. VEX robotics

C. Lego robotics

D. 3D printing based on CAD design

II. <u>Coding</u>

A. Code a game of tic-tac-toe on a coding platform/language of choice
1. Easy mode and a hard mode

B. Code a game of blackjack on coding platform/language of choice

C. Code an escape room game on coding platform/language of choice

D. Code your favorite online game or create a game (i.e. hangman, doodle jump)

E. Code a chess game (very advanced)

F. Code a maze solver

G. Use the Spotify API
1. https://developer.spotify.com/documentation/web-api

H. Use Youtube API
1. https://developers.google.com/youtube/v3

I. Use MapQuest API
1. https://developer.mapquest.com

J. Program an app to address an issue you face everyday

K. Machine Learning
1. Image Detection
2. Housing price predictions

L. Build your own website
1. E-portfolio

          a) Wix, Github, Google Sites, etc.

    2. Photography website

    3. Personal Blog about your engineering experiences

III. **Robotics**

Note: a lot of robotic projects are interdisciplinary and hone in on a variety of skills revolving around electronics, coding, modeling, and manufacturing.

    A. [Electronics Projects Ideas](#)
    B. [Electronics Projects Part 2](#)
    C. Build your own "Alexa"
    D. Build a robot that can draw
        1. Use software like Arduino
    E. [Paper Keyboard](#)
    F. [Mechanical Hand](#)
    G. [Hydraulic Arm](#)
    H. Pace monitor watch
    I. Heartbeat Monitor
    J. Rover that follows a designated path
    K. Quadcopter
    L. Autonomous Robot that can *[insert task of your choice]*
    M. [Raspberry Pi Projects](#)
        1. https://projects.raspberrypi.org/en
    N. Build your own "Alexa"
        1. You can look up tutorials online (YouTube and websites)
    O. Build an electric scooter or skateboard or bike
    P. Build and fly an RC plane
    Q. Temperature sensor
    R. Solar-powered grass cutter
    S. Automatic animal feeding system
    T. Device that can tell you when you are sufficiently parked inside of your garage
        1. Avoid hitting the wall or being hit by the garage door
    U. Create a wireless docking station for your devices

IV.   Other Ideas

    A. Rube Goldberg Machine

    B. Search up "engineering projects for college students" online for project ideas from individuals from other schools

    C. Search up engineering project videos on YouTube to spark inspiration

    D. Think about a problem you or your friends or your family deal with every day and build/create a solution for it

V.   Other Opportunities

    A. LinkedIn Certifications and Badges

    B. Google Career Certifications

    C. MicroInternships with Parker Dewey

    D. Take supplemental courses through edX and Coursera