

# Evan Shebel

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<https://ews6.github.io/portfolio/index.html>

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## Education

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University of Maryland Baltimore County, Baltimore Maryland, ABET Accredited

*Expected* B.S. Mathematics, **December, 2017**

*Graduate* B.S. Mechanical Engineering, 2015 (*Junior/Senior GPA 3.06*)

## Academic and Technical Skills

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- ❖ Robust feature and surface modeling experience with SolidWorks and Inventor
- ❖ ASME Y14.5
- ❖ Experienced with Matlab, Python
- ❖ Proficient in Microsoft Word, Excel, and PowerPoint
- ❖ Experience with basic machine shop tools i.e. manual mill and lathe
- ❖ Completed an *Earlbeck Gases and Technologies* 40-hour class on the fundamentals of GMAW, GTAW, SMAW, and oxy-fuel welding

## Electric Motorcycle Design Project

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Submitted a provisional patent. Cost and time caused me to not be able to convert the application to a non-provisional patent. More information is available in the projects section of my website [here](#).

Shebel, Evan. 2016. *Electric Motorcycle Frame* U.S Patent Application 62/351,276, filed June 16, 2016.

*Brief summary of the specification*

- ❖ Designed a motorcycle frame specifically for the constraints of a battery electric vehicle.
- ❖ The frame disposes an inclined, longitudinally distributed, battery assembly to facilitate pilot maneuverability, to attain a sufficient lean angle, to possess preferable handling characteristics, and to feature a preferable wheelbase dimension.
- ❖ The frame introduces features new to the field of battery electric motorcycles that further improve upon the motorcycle's handling, permit the engineering of mechanical compliance, or flex, and reduce the motorcycle's effective frontal area.

## Capstone

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- ❖ Worked among a five person team to redesign a quad rotor frame UAV for [UAV Solutions](#).
  - ❖ Aimed to achieve an increase in portability by having the frame fold to a volume small enough to fit into a police cruiser's trunk.
  - ❖ Used lightweight materials such as carbon fiber to increase flight time; with the goal of 60 minutes of mission time.
  - ❖ Utilized management and organizational tools such as a system boundary diagram, system requirements specification, conceptual design review, production schedule, Gantt chart, and bill of materials throughout the design and build phases.
  - ❖ Worked among a five person team including UMBC students and various students from Portugal to research, compose, and present multiple entrepreneurial aid projects for 3<sup>rd</sup> world countries with an engineering focus.
  - ❖ Presented to an audience of both UMBC and FUEP students and faculty.
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## Matlab

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- ❖ First programming language I learned. After taking the Matlab course for my engineering major I continued to make use of it in my engineering classes. For example, in my controls course I used it to check homework answers.
- ❖ Sample project of gauss-seidel method to solve system of linear equations.

## Python

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- ❖ Decision Structures, File I/O, Recursion, Dictionaries, Functions, Classes.
- ❖ Sample project of a minesweeper game that is updated using recursion.

## Arduino/Lab-View

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- ❖ Controls Lab project used the Arduino as a way to implement a control system. The project involved a throttle (potentiometer), H-Bridge Stepper Motor Driver, DC brushed motor, planetary gear set, and eccentric mass (magnet) that determined speed by sampling data from a fixed hall-effect sensor. The project was run through Lab-View to collect the data.
- ❖ The objective of the project was to map a 5V potentiometer to a motor with an unknown rpm range. The speed of the motor would be determined by reading the signal of the hall-effect sensor.
- ❖ Explored ways to improve the performance by implementing a closed loop feedback control system.
- ❖ The open loop response was compared to the corresponding potentiometer inputs and the drawbacks of the open loop system were analyzed.

## Work Experience

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*UPS – Part time*

Burtonsville MD  
November 2016- Current

*Landscaping*  
Self-employed

Ellicott City MD  
June – Aug. 2011-2012, 2014

*Seashore Ace Hardware*  
Sales Associate, Register, Stocking, Deliveries

Stone Harbor NJ  
June – Aug. 2013