# CHARLIE WEISS (she/her/hers)

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## EDUCATION

**Olin College of Engineering** 2020

Engineering: Robotics, 3.8 GPA

Relevant Coursework: Computational Robotics, Astronomy and Statistics, Software Systems, User Oriented Collaborative Design, Bayesian Inference and Reasoning, Quantitative Engineering Analysis

## EXPERIENCE

**Senior Capstone Project in Engineering (SCOPE)**, Olin College — Fall 2019 to Present

- User researcher and backend developer on team of four seniors working on year-long project sponsored by Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI)
- Improved user experience of one of CUAHSI's code and hydrologic data sharing webapps
- Conducted months of user interviews to identify points of improvement. Made mockups of these improvements to validate with users, and began implementing them in the backend with Python, Jupyter, and CUAHSI's HydroShare API.

**Data Science Intern**, NeuroScouting — Summer 2019

- Created a modified elo algorithm to evaluate the performance of baseball players during a scouting session game and rate the players against each other.
- Systematically evaluated algorithm for bias and error and thoroughly documented analyses for company documentation

**Cosmic Ray Detection with K-means Clustering**, Olin College — April 2019

- Implemented a k-means clustering algorithm in Python (using scikit-learn and SciPy) to classify cropped areas of images from the NEOWISE satellite into "cosmic ray" or "not cosmic ray."
- Created a script to facilitate the classification of validation data, including pre-processing with OpenCV
- Notebook available here: https://github.com/charlievweiss/cosmic_ray_detection/blob/master/data_analysis.ipynb

**Person Detection and Following with Neural Network**, Olin College — November 2018

- Implemented a convolutional neural network on a hacked robotic vacuum using Python (TensorFlow/Keras), ROS, Google Colab notebooks, and Apple's ARKit AR platform on an iPhone.
- Used camera and position data to train neural net to predict a person's ground truth position based on their position in the camera frame.
- Documentation here: github.com/charlievweiss/robot_learning

**Particle Filter Localization**, Olin College — October 2018

- Designed and implemented an architecture for particle filter localization, which used lidar and odometry readings to provide a pose estimate for a Neato robot's location on a map.
- Documentation here: https://github.com/ksoltan/robot_localization

**Multivariate Kalman Filter Research**, Olin College — December 2018

- Performed in-depth research into the multivariate Kalman filter in order to create thorough learning resources for other students.
- GitHub wiki here: https://github.com/olinrobotics/learning-resources/wiki/Multivariate-Kalman-Filter

**Facial Recognition with Eigenvectors**, Olin College — April 2016

- Created a facial recognition program in MATLAB by reducing a training set of images to a basis set of eigenvectors. Compared vectors based on similarity and formed groups of facial expressions likely to be the same person.
- Report available here: https://charlieweiss.info/facialrecognition/files/QEA_Facial_Rec.pdf

## SKILLS

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| **PROGRAMMING** | Python, C, MATLAB, Octave, ROS, Git, Linux |
| **CAD/DESIGN** | SolidWorks, OnShape, Fusion 360 |
| **FABRICATION** | Rapid Prototyping, Mill/Lathe, Sheet Metal, Soldering, MIG Welding |
| **HOBBIES** | Bookbinding, Photography, Crochet, Embroidery, Sewing |