

# ANTHONY LOWHUR

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Specialization in  
Artificial Intelligence,  
Computer Vision,  
Machine Learning,  
and Human-Computer  
Interaction

## Skills

### LANGUAGES

Python  
C  
C++  
Java  
JavaScript  
SQL  
PHP  
C#  
MATLAB  
HTML  
CSS

### PLATFORMS

OpenCV  
Sklearn  
Pybrain  
Tensorflow  
ROS + Gazebo  
Unity3D  
Vuforia

### HARDWARE

Leap Motion  
Microsoft Kinect  
Arduino  
Raspberry Pi

## Education

**Rutgers University , New Brunswick**  
B.S. Computer Science 2018  
Minor: Mathematics

### Online Course Work

Used Massive Online Open Courseware (MOOC) platforms for AI self studies, took higher level CS courses from top universities. Knowledge acquired: Machine Learning, Path Finding Algorithms and Adversarial Search, Reinforcement Learning, and Parallel Programming

## Experience

**Rutgers University, New Brunswick**  
Research Assistant

New Brunswick, New Jersey  
Jan 2016 to Current

- Designing intelligence of a robot that will compete in the Amazon Picking Challenge through computer vision and machine learning
- Currently researching in object detection in 3D space using depth maps produced by a Microsoft Kinect.

**Rutgers University, New Brunswick**  
Research Assistant

New Brunswick, New Jersey  
Sep 2015 to Dec 2015

- Researched in image processing / computer vision and machine learning to have autonomous drone to analyze and recognize the shape of trash on the beach and pick them up accordingly.
- Implemented by using histogram backprojection and morphological transform for segmentation.
- Used bag of words model and support vector machines as well as creating own dataset.

**Lehigh University**  
Research Assistant

Bethlehem, Pennsylvania  
Jun 2015 to Aug 2015

- Worked on an emotion recognition program on a robot by using computer vision and machine learning
- Implemented dense optical flow and support vector machines to create robust classifier resistant to unique facial appearance and poor lighting
- **Research paper presented and published as 1st author at the 2015 IEEE 12th International Conference (MASS) workshop in Dallas, Texas.**

## Personal Projects

### AI Algorithmic Melody Generator

- Takes in a song from a midi, analyzes patterns of the musical structure, and composing its own original melodies based on the patterns it had learned.
- Accomplished that by implementing Long Short Term Memory (LSTM) Neural Network
- Attempting to make full AI song composer, an AI that can generate entire songs with a series melodies.
- Currently experimenting with restricted boltzmann machines and LSTM layer

### Face Tracking via Haar Classification and Lucas Kanade

- Improved face tracking sample from OpenCV documentation by combining both Harr Classification and Lucas Kanade optical flow algorithm.
- This allowed the computer to track the face/head in various different angles (front face to side face) even with limited face dataset (Python)

### Road Segmentation for Autonomous Vehicles

- Uses computer vision and processing algorithms such as histogram backprojection and morphological filtering to perform road segmentation in order to detect and recognize roads in a noisy environment.
- Made to be implemented in the DriveAI project, an initiative for open-source autonomous vehicles. (Python)

### Lyrics Generator based on Markov Chains

- Implemented markov chains on lyrics data scrapped from the web to create program that can generate its own unique set of lyrics based on genre.
- Have the capability of creating lyrics based on syllable count per line. Part of a long term project to create a full AI song composer. (Python)