

ParkSense

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October 31, 2023

Motivation

Background

- ① Parking Shortage
- ② Computer Vision



Technology

① Computer Vision and Deep Learning

- (a) OpenCV
- (b) Ultralytics: YOLOv8



② Hardware

- (a) Raspberry Pi 2 Model B+
- (b) Raspberry Pi Camera Module



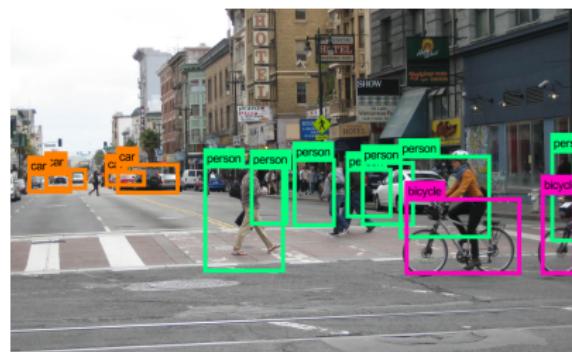
What is Computer Vision?

① Subset of Artificial Intelligence (AI)

- (a) Allows the Computer to "see"
- (b) Crucial for Object Detection

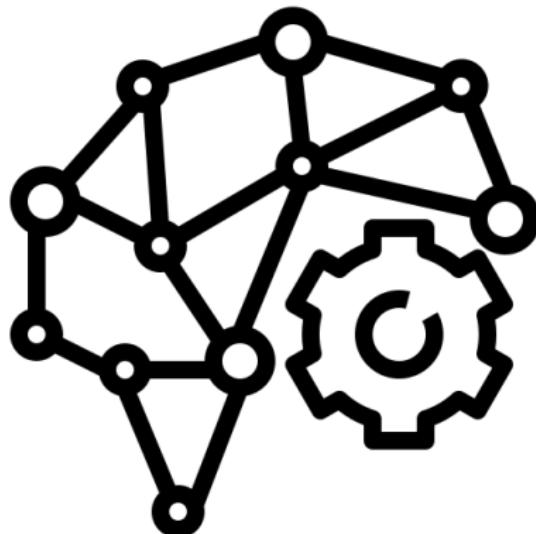
② How Does It Work?

- (a) Deep Learning
- (b) Image Processing



What is Deep Learning?

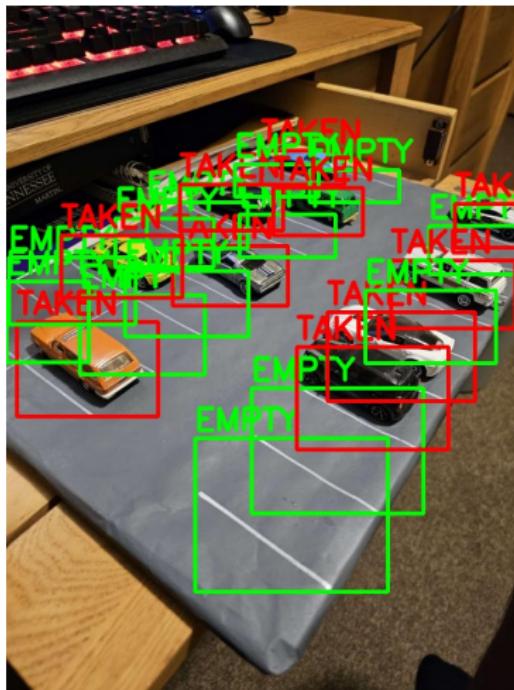
- ① Subset of Machine Learning
 - ⓐ What's the Difference?
 - ⓑ Allows the Ability to "learn" on Data
- ② How Does It Work?
 - ⓐ Receives Labelled Data-set
 - ⓑ Iterates Over Data-set
 - ⓒ Forms a Model for Use



Goals

- ① Provide a Web Dashboard with Lot Information
 - ⓐ Current Spot Availability
 - ⓑ Predictive Trends
- ② Set Precedent for Similar Projects
 - ⓐ Training Custom Data Sets with Machine Learning
 - ⓑ Portable Computing and Networking

Demonstration



Webpage

Data Pipeline

- ① Data Collection
- ② Server Event Handler
- ③ Client Updated



```
Project/Program$ cat data.txt  
17 Emptys, 6 Takens
```

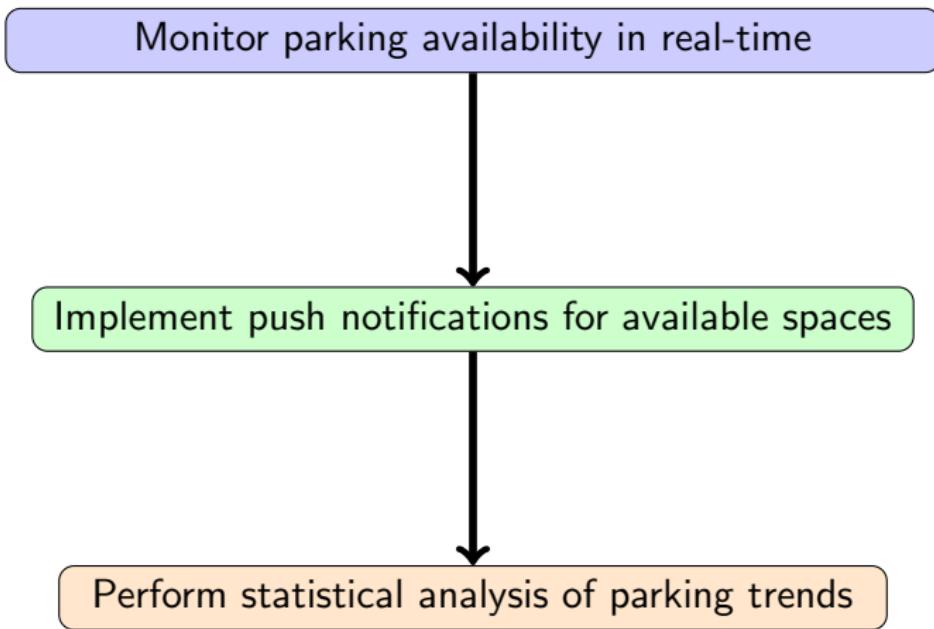


Challenges

- ① Compiling and running code on low power devices
- ② Building a stable model under varied conditions



Future Work



Any Questions?

Questions? Comments?

Further project/author information:

Please visit our GitHub repository for more details:

github.com/Spencek7746/Senior-Design-Project

