[Parking Management System Components and Subsystems](https://courses.torontomu.ca/d2l/le/content/794625/viewContent/5303682/View)

# High-Level Subsystems

* Parking space tracking system (tool)
  + IOT system to manage wireless communication between sensors.
    - Sensors, Arduino, ESP32
    - Parking correction system using sensors and leds for indicators
    - How to implement sensors
  + Sensors, arduino
  + Check-in ←→ check-out system for each spot
* Parking lot activity tracker?
  + Camera tracking movement and unparked cars
  + Queue tracker?
* User-Interface Application
  + Reservation tool
    - Backend reservation system
      * Premium, regular, open
    - Database
  + Data collection and analysis tool
    - Parking statistics and occupancy rates

# High-Level Components

* Backend
  + Parking reservation system (Part of Database maybe ?)
  + ML and Advanced Algo(*We can name it something*) to optimize vehicle parking
    - Come up with an efficient algorithm that can suggest parking spot pricing to produce profits.
    - To tie it up with frontend, provide suggesting to drivers on which spots are available. (Refer to frontend
  + Data collection to run logs and run statistics..
    - Feedback system that can utilize the collected data to optimize the above mentioned algorithm.
* Frontend (App)
  + User Signup/Login page → user database
  + User-interface for reservations
* Parking space monitoring tool
  + Arduino, sensors
* Parking lot testing model

Research Stuff

* Think of a Problem scenario
  + Research about the specifications of an average parking lot. How many parking spots there are, number of average spots in a row etc…
  + Different parking styles (Ex. angled parking).
* Research 6
* **Research how wireless sensors can be set up.**
* **Research the potential available sensors that are viable for our project. Research their potential use cases, how efficient they can be etc..**

BONUS STUFF

* Research if there is a license plate lookup database out there. Could be hooked up to our backend to potentially automate user registration.
* Conflict Management
  + Research how towing services can be notified to manage parking conflicts.
* Security features, if any equipment goes down notifies authorities, video surveilance tool.
* Ministry of transportation database
* Disabled parking

Questions ?

**Need to create separate documents describing requirements and specifications of each subsystem.**