

# Senior Design Project - ParkSense

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## ABSTRACT

UPDATED—September 9, 2023. A problem that has always plagued our campus is the struggle to find open parking anywhere during class hours. This has led to students parking farther away from campus, leading to longer-than-expected travel times to arrive to class. Consequentially, some students may arrive late, disrupting the lecture and possibly leaving a mark on their attendance grade.

To address this issue, we are working on an IoT approach to solving this problem by using OpenCV, a Raspberry Pi, and a camera module. With OpenCV's extensive and real-time computer vision library, we will build our own object detection software that is trained on our own custom data to detect empty and taken parking spots. We will then feed this data to a user interface which will update periodically and accurately communicate the availability of parking to the user. If we are finished with our main goals before our project deadline, we will implement our stretch goals for the project such as statistical analysis of sampled data regarding the best and worst times to find open parking and the creation of a mobile-formatted version of our interface.

The duration of the implementation and completion of the project's base goals as well as any further implementation of stretch goals before our deadline is roughly 3 months (August-November). We will be using a parking-lot mock-up to assist the creation of our data as we believe that any modification and collection data will be substantially easier as compared to the required set-up and maintenance for collecting data of a real parking-lot.

## Author Keywords

Authors' choice; of terms; separated; by semicolons; include commas, within terms only; this section is required.

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## REFERENCES

1. Epic Games Inc. The Unreal Engine. <https://www.unrealengine.com/en-US>, 2022.
2. J. G. Smith and H. K. Weston. Nothing particular in this year’s history. *J. Geophys. Res.*, 2:14–15, 1954.