Project Description:

E-Parc is an application that enhances on-campus parking by providing real-time data information with GPS programming, therefore reducing parking congestion and improving mobility at peak traffic hours.

Requirements Summary:

	Processor Cores	OS	RAM	Storage
MINIMUM REQUIREMENTS	**Dual core**	**Android 5.0 (Lollipop)**	**2 GB**	**300 – 400MB free space**
RECOMMENDED REQUIREMENTS	**Processor Cores**	**OS**	**RAM**	
	Quad core, Octa core	**Android 9.0 (Pie)**	**4GB and higher**	**600-700 MB free space**
OTHER REQUIREMENTS	**Permissions**	**Camera(for QR scan), Location, storage, notifications**		

Table 1. System Requirements

The E-Parc app has reasonable system requirements for older and newer Android devices. The app will run on a phone with 2 GB of RAM and any version of Android beginning with 5.0. It is best utilized on more updated phones with 4 GB RAM and Android 9.0 or above. It uses maps, QR scanning, and notifications, so it will require the use of your location, camera, storage, and internet access.

Overview

Finding a parking spot on campus can be a frustrating daily routine for some people. During peak hours, it's common to drive around in circles, just hoping for a space to open up. This wastes time, builds stress, and adds to campus traffic. Most people currently rely on outdated signs, security guard updates, or group chats to figure out where to park, and these just aren't reliable enough.

Technique	Description
User-Centered System Design (UCSD)	This approach places the user at the centre of the design process. It means that the team set out to identify what students, faculty and visitors actually need when parking, then designed the app around those needs using surveys, interviews and testing.
Prototyping using Figma	The team made interactive mockups of the app in Figma to envision and test how the app would look and function before building it for real. This allowed them to test out ideas very quickly, get feedback, and improve the design from what users enjoyed or found confusing.

Task Analysis	This method analyzes what users are trying to accomplish—finding parking, getting to it, and saving it—and breaks it down into very clear, smaller actions. This gave the team a way to create a better experience by reducing the number of taps and ensuring each action was both quick and easy.

Data Presentation and Analysis:

SECTION 1	Mean	Interpretation	Classification
On a scale of 1 to 5 how would you rate your experience with the Sasha Prototype	4	Acceptable	Successful
On a scale of 1 to 5 how was the UI design of the prototype	4.18	Acceptable	Successful
How easily were you able to follow the tasks provided	4.09	Acceptable	Successful

Help and Documentation

Users were able to access Help or Assistance through the form of the present team members.

Heuristics Conclusion

Overall, the Prototype was able to follow most of the Evaluations with some issues that still need to be properly addressed or fixed.

Participant Survey and Feedback

Results

SECTION 1			
Question	Mean	Interpretation	Classification
On a scale of 1 to 5 how would you rate your experience with the Sasha Prototype	4	Acceptable	Successful
On a scale of 1 to 5 how was the UI design of the prototype	4.18	Acceptable	Successful
How easily were you able to follow the tasks provided	4.09	Acceptable	Successful
SECTION 2			
Navigation Drawer	4.27	Acceptable	Successful
Accessing Files	4.45	Acceptable	Successful
Renaming a File/Folder	3.91	Moderately Acceptable	Neutral
Importing PDF or IMG files	4.82	Highly Acceptable	Successful
Creating or Adding Folders, Text Files, Tasks, and Quiz Files	4.55	Highly Acceptable	Successful
Creating Folders, Text Files, Tasks, and Quiz Files	4.64	Highly Acceptable	Successful
Quiz Making	4.64	Highly Acceptable	Successful
Quiz Taking	4.45	Acceptable	Successful

Sorting of Files and Folders	4.27	Acceptable	Successful
Deleting Files or Folders	4.36	Acceptable	Successful
Average	4.36	Acceptable	Successful

Table 3. Survey Data Interpretation

Feedback

Design Implications:

- Does your prototype need to be altered in order to address the results of the analysis, or was it completely successful?

Critique and Summary:

What were the advantages and disadvantages of your evaluation?

- ADVANTAGES

  Our evaluation provided beneficial feedback early in the development process, especially through user testing of the prototype. It helped us identify which concepts and functions worked (including the color-coded zones and simple navigation) and that users found the app easy to use. Because we used Figma, we could easily test concepts and make changes without a fully developed app version. We listened to users' feedback in real time, which assisted us in making actionable improvements in the design, thus making the functionality more user-friendly.

- DISADVANTAGES

  That being said, there were obvious constraints to the evaluation. The majority of the testing was conducted in controlled environments, and we didn't observe app performance when users are 'in the wild' and under pressure to find a parking spot. Similarly, our user feedback group was limited in representation; it was mostly students, and didn't have the necessary diversity of users, such as staff and visitors to campus. Because the prototype was not connected to real data, or not tested to understand how users would respond to live, changing conditions, for example, a parking zone filling unexpectedly. Because these constraints were significant, it limited our evaluation of how the app would support usable contingencies as an everyday-use application.

What would you have done differently knowing what you know now (both design-wise and evaluation-wise)? Given more resources, what could you have done that would have produced significantly more insightful evaluation results (again, whether this is an improved prototype or a different evaluation path).

- It would have been best to know about those usability problems before they morphed into usability problems of a larger caliber. The team also made notes about accessibility and testing for disabled users. They tested in controlled conditions. If they'd had the time and money, they'd have tested when the college students were under the maximum amount of stress on campus (during peak hours). With more resources and time, they could've had a semi-working app with synthesized data to demonstrate the screens as a real-world simulation of sorts that tracked taps, selections, and exits. It's also possible they could have A/B tested different layouts or buttons. In the end, more real-world feedback and testing would have only acted to enhance the app's usability and reliability in addressing everyday parking-related causes of frustration.

Summary of the Project

E- Park is a mobile application," that is specifically designed to alleviate the everyday struggle of finding a parking spot on campus, E-Parc assists students, faculty, and visitors alike in finding available parking spots on campus available in real time, and gets users there typically within minutes from the time they select an area on the app, relieving their stress and saving valuable time in the process. It is simple, fast, and really practical even in low-signal areas, which is crucial for busy users.

E-Park can provide other benefits beyond convenience. When we can assist in cutting down the number of cars circling and looking for parking (which also contributes to total emissions and fuel use), this also contributes to environmental improvement. If we can use a similar application, in a large enough area citywide or across multiple institutions, not only could we leverage the real-time data and reduce emissions/parking searches, but we could also assist with easing traffic around streets that surround campuses, and support "smart parking" behavior with more efficiency and ease.

E-Park does face challenges in being able to demonstrate realistic real-time data with new available spots available through the app and support multiple devices, not to mention challenges surrounding maintaining system performance. The focus of E-PARC is on the fundamentals (easier or smoother parking) that benefit the users, as well as the environment.