Deakin University

Capstone Team Project (B)

OnTrack Submission

Company Objectives and Structure

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s222365243	Ashok	Bishowkarma	
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March 17, 2024

Chameleon

Task 2.1 P – Company Objective and Structure

Executive Summary

Our Mission

Given the complexity of energy application needs today, IoT systems are being designed to address a wide variety of existing problems.

At Chameleon, our mission is to research, create, test, document and deploy IoT-based solutions to enhance life through the application of smart city technologies. Including the building of smarter cities, homes, transportation, and energy management systems.

Our Structure

Four active company divisions,

Chameleon Security (CS)

City of Melbourne Open Data (MOP)

Chameleon Website (CW)

Electric Vehicle Adoption Tools (EV)

Chameleon Security

The Chameleon Security Project engages with the City of Melbourne Open Data Project (Melbourne Open Playground – MOP), Chameleon EV and the Chameleon Website Project, to perform security testing, development of security guidelines, and recommendations, to guide the other projects in the security of their systems and applications. The Chameleon Security Project was formerly engaged under the MOP Project, however, has been separated to operate as its own entity, to enable security testing of all projects that fall under the Chameleon company.

City of Melbourne Open Data

The City of Melbourne Open Data partners with The City of Melbourne to support knowledge expansion and application development among businesses, researchers and software developers. Using an educational platform 'The Melbourne Open Playground' (MOP) explores the potential applications of Open Data, aligning its initiatives with Melbourne's Smart City strategies.

Chameleon Website

The Chameleon Website is a user-friendly and informative gateway to the Company, it targets potential clients and the public to showcase the company's initiatives and achievements. The website continues to evolve aimed to enhance user experience and engagement using responsive design, mobile optimisation and SEO strategies. These objectives aim to communicate Chameleons vision and projects to create a dynamic and secure online presence.

EV Adoption Tools

The EV Adoption Tools project is dedicated to promoting the increased adoption of Electric Vehicles (EVs) in Australia. This initiative supports the reduction of fossil fuel dependence, decreases greenhouse gas emissions, and positively impacts the environment.

Leadership Team

Acting Director: A/ Prof. Chathu Ranaweera (Associate Professor)

Chameleon Security:

Communications Lead: Nathan Tien Le Nguyen
Code Lead: Kartik Kaushik
Coordination Lead: Theodore Savvidis
Leaders: Theodore Savvidis, Kartik Kaushik, Nathan Tien Le Nguyen, Miriam Azmy, Hamish Andrew Burnett, Pascal Traczewski, Shuodong Xing, Su Myat Win

City of Melbourne Open Data Project

Project Leads: Mollie Fernandez, Te' Claire, Alison Collins
Data Science Team Leads: Rhutuvaruni Kharade, Harley Ngo
Web Development Team Leads: Kasey Wu, Sakif Hasan
Leaders: Kashish Bansal, Madhuvaishali Thakoor, Mukul Singh, Samiha Haque & Sim Simranjit Singh, Hoang Duy Vu, Thomas Rostov and Suraj Kuwar

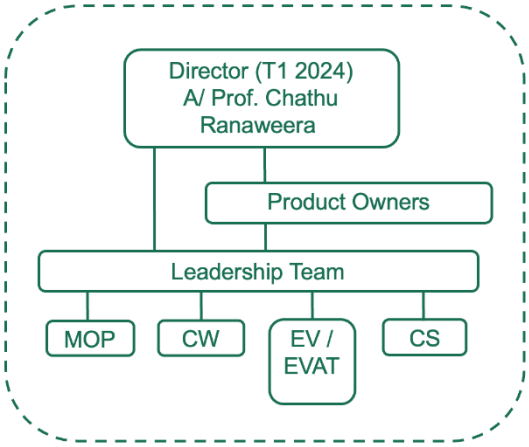
Chameleon Website

Leaders: Chris Hole,
Matheesha Nirvan Palliyaguruge,
Varun Chaudhary,
Umair Mohamed Feroze

EV Adoption Tools

Project Leads: Akshit Singh
Data Science Team Leads: James Davies
Web Development Team Leads: Akshit Singh
Leaders: Akshit Singh, Ethan Rose, James Davies, Yuyraj Singh Sekhon

Company Structure



Trimester 1 Goals and Objectives

This trimester Chameleon seeks to continue the development of its independent security team, to strengthen the security of all digital products within Chameleon helping to quickly identify and secure any potential attack vectors. The City of Melbourne Project seeks to develop more use cases and implement existing use cases and get the site up and running. The website team seeks to further enhance its UX and design (focusing on the mobile experience) and implement multiple backend services (such as Firebase and Mailgun) and transfer from AWS to GCP hosting solutions.

Projects Overview

Chameleon Security

Overview

The Chameleon Security team intends to operate independently within the company with a dedicated focus on strengthening the digital security of its projects. This trimester the security team aims to align its work with the Melbourne Open Data Project (MOP) and Chameleon Website Project. The overarching goal is to proactively identify and address potential vulnerabilities, as shown through different initiatives. E.g. SQL Injection testing, compliance audits aligned with national and international security standards, and the execution of a variety of security attacks, (including ARP Spoofing, Header Injection attacks, and Directory Traversal attacks, on both the Chameleon and MOP websites).

As a team, we will be working closely with the Chameleon Website Development team to ensure high-quality security, and through this collaboration, it will improve the overall project where possible. The security team will aim to not only work on the security of the projects and web pages of the company, but also encourage the development of the wider project,

through documenting findings, and using problem solving, to aid in the growth of the wider project landscape. Ultimately, this will also aid in the project handover at the end of the eleven weeks.

Goals and Objectives

The project includes the development of a training program which includes the usage of the security applications, identifying potential vulnerabilities and ensuring the platform's robustness, to ensure that the platform concretely demonstrates the practical application of open data. It is designed to meet the needs of a variety of stakeholders, including industry professionals, government agencies and academic researchers. The aim of this project is to find the different vulnerabilities in the Chameleon and MOP websites, by usage of the different attacks such as SQL Injections, XMAS scans etc, while the long-term aim is to encourage the use of data and provide innovative and informed solutions to contemporary issues within Melbourne City Council.

Aims This Trimester

The aim for this trimester, is to continue the smooth transition of the security team from the other teams. While we will still set out to perform security tasks on behalf of the other teams, we will also focus on performing our own tasks as well. Following this, the aim for this trimester, is to perform security testing, develop security guidelines & lastly, to recommend other projects, security features & vulnerabilities that the development teams should be aware of.

Deliverables

- Collaborate with City of Melbourne (MOP), and Chameleon Website teams, to create a Security page on both websites.
- Perform Authentication and Authorisation testing, to ensure only valid users are allowed to access the website.
- Contact HardHat Company, to enquire about collaboration between companies.
- Document current security attacks and how Chameleon can harden web applications to stay protected from cyber-attacks.
- Develop various security policies and procedures. This includes documenting various policies, covering Privacy, IoT, Intellectual Property, Remote Access, Security Awareness and Training, Access Control, Network Security, and Incident Response plans.
- Complete Security auditing, and Compliance Auditing, in line with national and international security standards.
- Inspect DNS configuration on the Chameleon website, and address security vulnerabilities.
- Conduct and document Cyber Security Risk Assessment and a Third-Party Component Assessment.
- Execute SQL injection attacks on the Chameleon, and MOP websites, to ensure the database cannot be manipulated.
- Carry out ARP Spoofing attack on the MOP website and document findings.

- Perform Input Validation for MOP website, to detect, and prevent malicious input.
- Perform Directory Traversal attack on Chameleon website, to prevent other files on the server from being accessed.
- Perform Port Scan on both MOP and Chameleon websites, to identify open ports which can be used for malicious activity.
- Perform Header Injection attack on Chameleon website.

Security Project Team Members:

Name	Student ID	UG/PG	J/S	Team	Lead
Hamish Andrew Burnett	222282244	UG	Junior	Security	Yes
Nathan Tien Le Nguyen	221365574	UG	Senior	Security	Yes
Leon Jude Netto	218723755	PG	Senior	Security	No
Theodore Savvidis	220562771	UG	Senior	Security	Yes
Kartik Kaushik	221453995	UG	Senior	Security	Yes
Adam Tay	213149152	UG	Senior	Security	No
Ethan Rose	221190328	UG	Senior	Security	No
Miriam Azmy	220268915	UG	Senior	Security	Yes
Adrian Thomas Thaus	222275741	UG	Junior	Security	No
Adam Sarin	217342706	UG	Senior	Security	No
Ahmad Rahman	222035605	UG	Junior	Security	No
Bipanjeet Singh Sodhi	222093716	UG	Junior	Security	No
Brock Dylan Alexiadis	220256787	UG	Junior	Security	No
Hadi Alharbi	220474833	UG	Junior	Security	No
Harry Tierney	221190865	UG	Junior	Security	No
Jason Galletti	219594483	UG	Junior	Security	No
Jesvin Sabu	222052497	UG	Junior	Security	No
Jordan Belli	221202537	UG	Junior	Security	No
Julian Holland	220330887	UG	Junior	Security	No
Rewniz Patell	221267802	UG	Junior	Security	No
Tolulope Ebenezer Akin-Dada	223022696	PG	Junior	Security	No
Lucas Kocon	218510242	UG	Senior	Security	No
Pascal Traczewski	220493959	UG	Junior	Security	No
Sanchit Mahajan	222463578	UG	Senior	Security	No
Shuodong Xing	219368407	UG	Senior	Security	Yes
Su Myat Win	222385178	UG	Junior	Security	Yes
Usman Tariq	217034263	PG	Junior	Security	No
Dan Blair	223215521	PG	Junior	Security	No

City of Melbourne Open Data Project – Melbourne Open Playground (MOP)

Overview

Since 2014, the City of Melbourne has been at the forefront of Open Data in Australia. Collaborating with Deakin, they drive increased utilisation of their Open Data by businesses, researchers, and developers. Integral to their smart cities' strategy, the Melbourne Open Data

Playground (MOP) website will feature MOP's operations, security details, and use cases aligned with its goals and objectives.

Goals and Objectives

The project objective is to create an educational platform focused on practical open data applications tailored for various stakeholders, including industry experts, government agencies and academic scholars. The long-term goals are to data mine and track the City of Melbourne's open data, provide innovative solutions to the challenges faced by the City of Melbourne, increase data usage rate, and support urban smart strategies.

Aims This Trimester

The focus is to systematically address each published and upcoming notebook, modifying and updating code to ensure proper functionality when downloaded.

The aim of the Data Science team is to develop an IoT based collection of use cases that align with the City of Melbourne's three predefined areas of interest (Business, Environment and Wellbeing). The team intends to complete an entire set of use cases while also preparing a backlog for the next trimester.

The primary goal of our web development team is to integrate our website with user cases supplied by the Data Science team, enabling easy access through a sophisticated database solution. Additionally, we aim to deploy, rigorously test, and ultimately host the City of Melbourne's website. Our efforts will also extend to enhancing the website's design, framework, and features, ensuring a seamless and engaging user experience.

Another major focus for the project leadership is to update the API for all published notebooks, create new use cases, complete unfinished use cases, propose new use cases, improve organisation in GitHub and MS Teams directories, and generate multiple new use cases for future backlogs.

Deliverables

Data Science Team

- Prepare for the release of completed analysed use cases.
- Create 5 new use cases ideas to ensure the teams continued output.
- Develop 3-8 relevant and valuable use cases.
- Continue to update data and API for early project cases to ensure the latest analysis.
- Replace local files with online sources for older cases to improve analysis reproducibility.
- Continue to update and improve the file systems of GitHub and Teams to provide efficient guidance.
- Continue to complete the backlog in Trello.

Website Development Team

- Publish all completed use cases.
- Ensure the establishment and maintenance of a fully functional website with uninterrupted operational capacity.

- Establish a dedicated database and integrate a webpage on the site where the data science team can seamlessly upload their work.
- Enhance the design system by refining symmetry and incorporating more intricate details. The objective is to develop a purpose-driven design that enhances the overall user experience.
- Conduct testing for the website.
- Deployment of the website and ultimately host the website.
- Incorporate the Next.js framework for streamlined website routing functionality.
- Integrate useful figures such as account management functionality and multi-language support within the system.
- Migrate from traditional CSS to Tailwind for a more efficient and straightforward approach to website styling.
- Ensure the website is responsive across various platforms for seamless user experience on desktop, tablet, and mobile devices.

Melbourne Open Data Project Team Members

Name	Student ID	UG/PG	J/S	Team	Leader
Mollie Fernandez	217285498	PG	Senior	Data Sci	Project Lead
Alison (Ali) Collins	222364505	PG	Senior	Data Sci	Project Lead
Te' Claire	220320033	UG	Senior	Data Sci	Project Lead
Ha Trang (Harley) Ngo	222100745	PG	Senior	Data Sci	Data Sci Lead
Rhutuvaruni Kharade	222021231	PG	Senior	Data Sci	Data Sci Lead
Madhuvaishali(Vaishali) Thakoor	218335436	UG	Junior	Data Sci	Yes
Dan Blair	223215521	PG	Junior	Data Sci	Yes
Thomas Alexander Rostov	221260666	UG	Junior	Data Sci	Yes
Sachitha Sadeep Kasthuriarachchi	223270464	PG	Junior	Data Sci	Yes
Samiha Haque	223935632	PG	Junior	Data Sci	Yes
Akintomiwa James Aremu	222497446	PG	Junior	Data Sci	Yes
Dinuk Nadishan Kariyawasam Senadheerage	223237065	PG	Junior	Data Sci	Yes
Katrine Kit-Ying Chan	221375343	PG	Junior	Data Sci	Yes
Venuka Hirusha Wijenayake	223048223	PG	Junior	Data Sci	Yes
Adrien Auguste	214528565	UG	Senior	Data Sci	No
Sheng Tha (Tharusha) Cao	222079586	UG	Senior	Data Sci	No
Wing Sum (Carissa) Wong	222104491	PG	Senior	Data Sci	No
Daljeet Kaur	222049265	PG	Junior	Data Sci	No
Mai Chi (Jamie) Hoang	222187106	PG	Senior	Data Sci	No
Manasa Nagaraja	222586756	PG	Junior	Data Sci	Yes
Prathibha Nishadini Kandawala	222440671	PG	Senior	Data Sci	No

Quoc Bao Phan	222017442	PG	Junior	Data Sci	No
Sinan Kilci	222356603	PG	Junior	Data Sci	No
Yash Krupanand Daware	222482648	PG	Senior	Data Sci	No
Arjun Jamwal	222300263	PG	Senior	Data Sci	No
Bao NGO	220313209	PG	Junior	Data Sci	No
Francis Albert	223045645	PG	Junior	Data Sci	No
Ramandeep Singh (Ghuman)	222196318	UG	Senior	Data Sci	No
Ruofeng QIU	222364873	PG	Senior	Data Sci	No
Thomas Warren	223053304	PG	Senior	Data Sci	No
Sakif Hasan	222093645	PG	Senior	Web Dev	Web Dev Lead
You (Kasey) Wu	222482192	PG	Senior	Web Dev	Web Dev Lead
Ashok Bishowkarma	222365243	PG	Senior	Web Dev	Yes
Kashish Bansal	222437163	UG	Senior	Web Dev	Yes
Abanob Mikhael	221429529	UG	Senior	Web Dev	No
Allen Gao	222018485	PG	Senior	Web Dev	No
Pema Lhagyal	219130345	UG	Senior	Web Dev	No
Simranjit Singh	222341387	PG	Senior	Web Dev	No
Mukul Singh	222296609	PG`	Junior	Web Dev	Yes
Thisu Nanayakkara	222084424	UG	Senior	Web Dev	No
Hoang Duy Vu	222461495	UG	Junior	Web Dev	Yes
Suraj Kuwar	223183442	PG	Junior	Web Dev	Yes
Chaya Shiv	221071557	UG	Junior	Web Dev	No
Linda Li	220452853	UG	Junior	Web Dev	No
Thamasha Galahahena Mudiyanselage	223043446	PG	Junior	Web Dev	No
Arman Ajimali Dhamani	221301447	UG	Junior	Web Dev	No

Chameleon Website

Overview

The website serves as a dynamic platform to not only publicize the achievements and progress of Chameleon but also to engage with stakeholders, including clients, partners, investors, and the public. By providing comprehensive information about Chameleon's overarching goals, values, and accomplishments, the website aims to enhance transparency and foster trust among its diverse audience.

Goals and Objectives

The main objectives of the Chameleon company's website are multifaceted, aiming to provide a centralised hub where visitors can access comprehensive information about Chameleon and its subsidiary companies. This one-stop destination is designed to advocate for the company's

mission and promote its services while ensuring the website remains visually appealing and user-friendly.

Aims This Trimester

This trimester, our main goals are to enhance the website's usability and engagement. We'll improve the contact form, add social media sharing buttons, optimise images for faster loading on mobile devices, customise the 404 error page, ensure browser compatibility, enhance accessibility, implement a newsletter signup popup, optimise performance, create interactive tutorials, and incorporate a user feedback mechanism. These efforts aim to provide a seamless and enjoyable experience for all users.

Deliverables

- Enhance the contact form with validation checks and confirmation messages.
- Integrate social media sharing buttons for increased content sharing.
- Optimise images for faster loading on mobile devices.
- Customise the 404 error page to guide users back to main content.
- Conduct browser compatibility testing.
- Make accessibility enhancements for users with disabilities.
- Implement a newsletter signup popup.
- Optimise website performance.
- Create interactive tutorials.
- Incorporate a user feedback mechanism.

Chameleon Website Project Team Members

Name	Student ID	UG/PG	J/S
Victor Xiao	220229302	UG	S
Akashdeep	223040483	PG	J
Minh Khoi Pham	220189994	UG	J
Matheesha Palliyaguruge	222506155	UG	S
Kanishk Rajvanshi	222486026	PG	S
Hao Huang	223304143	PG	S
Lachlan Exton	219222529	UG	S
Chris hole	220118255	UG	J
Pranshul	222196274	UG	S
Kashish Bansal	222206515	UG	S
Umair Feroze	218118134	PG	J
Abhishek Chiluka	223046759	PG	J
George Kok Luen Chia	219600175	UG	S
Seohee Lee	222127941	PG	S
Varun Chaudhary	222506155	PG	J
Leon Netto	218723755	PG	S
Kevin Pham	220189994	UG	J
Pranshul	222196274	UG	S

Uttam Chandu	220507122	UG	S
Arman Dhamani	221301447	UG	J

EV Adoption Tools

Overview

The EV Adoption Tools project was initiated with the objective of promoting the widespread adoption of Electric Vehicles (EVs) in Australia. By leveraging innovative tools and strategies, the project seeks to address key barriers to EV adoption, thereby contributing to a reduction in fossil fuel dependency, mitigation of greenhouse gas emissions, and fostering a positive environmental impact on both local and global scales.

In response to the significant interest of team members in web development and data science, the project "EV Charger Forecasting and Location Optimization" has been formulated for this trimester. The project aims to harness the collective expertise and enthusiasm of the team to address key challenges in the adoption of Electric Vehicles (EVs), particularly focusing on forecasting demand for EV chargers and optimizing their locations for maximum effectiveness.

Overview of EVCFLO :

The EVCFLO project serves to support its cause through two primary services: interactive maps powered by the Google API and an AI Prediction System. These services work in tandem to facilitate the identification of optimal locations for Electric Vehicle Charging Stations (EVCS), ensuring efficient utilization by the target population.

Goals & Objectives

The main objective of the EVCFLO project is to make Electric Vehicle Charging Stations (EVCS) more accessible and efficient. Our Web Development Team will work on improving the website and app design, making it easier for users to navigate and find information. We'll also integrate new EVCS locations into our maps and enhance search functionality for better usability. Meanwhile, the Data Science Team will focus on expanding our database with Australian-specific data and developing AI models to support EVCS development and adoption. Through collaboration, we'll deploy machine learning models for Victoria and Queensland and improve mapping features together. Overall, our goal is to provide a user-friendly platform that promotes the use of electric vehicles and sustainable transportation options.

Aims this Trimester

In this trimester, our primary focus within the EVCFLO project is to significantly enhance the user experience and functionality of our platform while expanding our data resources and analytical capabilities. We aim to achieve this by implementing key improvements outlined in our goals, such as refining website and app design, integrating new EVCS locations into our maps, and optimizing search functionality. Additionally, we are committed to expanding our database with Australian-specific data and developing AI models to better support EVCS development and adoption. Through collaboration between our Web Development and Data Science teams, we aim to deploy machine learning models for Victoria and Queensland, further enhancing our platform's effectiveness. Ultimately, our aim for this trimester is to advance the accessibility and utilization of Electric Vehicle Charging Stations, contributing to a more sustainable transportation landscape.

Trimester Deliverables

Web Development Team:

- Further update the design of the EVCFLO website and app.
- Display newly discovered EVCS locations on the visual map.
- Integrate new EVCS locations into our Google API interactive map.
- Improve the functionality of the search bar on the research webpage.
- Enhance mapping features, EVCS search functions, and visualizations.

Data Science Team:

- Expand the EV Charge Location database by adding new datasets focusing on Australian information.
- Develop additional EVCS-related AI/ML models to support EVCS development and promote EV adoption.
- Conduct further research and exploratory data analysis (EDA) on newfound datasets.

Collaboration (Data Science & Web Development Teams):

- Fully deploy EVCS Machine Learning density clustering models for both Victoria and Queensland on the AI Models webpage.
- Collaborate to ameliorate current mapping features, EVCS search functions, and visualizations.

EVCFLO Project Members

Name	Student ID	UG/PG	J/S	Team	Lead
VARUN SAI	**221013876**	UG	Senior	WEB DEV	NO
AUROBINDO	**221013938**	UG	Senior		NO
MENGQIAN	**223065159**	PG	Junior	DATA SCIENCE	NO
AASHRITHA	**222453913**	UG	Senior	WEB DEV	NO
SHILPA	**222315366**	PG	Senior	DATA SCIENCE	NO
FANGZHOU	**222305846**	UG	Junior	WEB DEV	NO
YUVRAJ SINGH	**222184401**	UG	Senior	DATA SCIENCE	**YES**
MADELINE ROSE	**221279862**	UG	Junior	DATA SCIENCE	NO
YUHUA	**221209335**	UG	Junior		NO
AKSHIT	**221071548**	UG	Senior	WEB DEV	**YES**
KAELEN ADAM	**222277913**	UG	Junior		NO
HONGKUN	**220427276**	UG	Junior	WEB DEV	NO
ETHAN	**221190328**	UG	Junior		**YES**
AUTH	**218033849**	UG	Senior		NO
JAMES	**218377995**	PG	Junior	DATA SCIENCE	**YES**
KA HO SAMUEL	**222518061**	PG	Junior		NO
SAM	**221437663**	UG	Junior		NO
RATANAK	**219339559**	UG	Senior	WEB DEV	NO

NOTE: The roles for the remaining team members will be decided in the next meeting on 18th March, 2024 with the product owner, Dr. Valeh Moghaddam with more information about the project final requirements.