
# Kim's Convenience Modern Cinema

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## Revision History

| Version | Date | Description of Change | Changes Made by |
|---|---|---|---|
| 1.0 | 26/08/2021 | Executive Summary, Statement of Problem and Objectives | Wong Ying |
| 2.0 | 28/08/2021 | Technical Approach, Review Executive Summary, Statement of Problem and Objectives | Hussain, Jeremy, Wong Ying, Parthsarthi |
| 3.0 | 28/08/2021 | Project Management, Deliverables and Budget, | Desmond |
| 3.1 | 29/08/2021 | Revision of Gantt chart and Project Management, Communication and Coordination with Sponsor, Conclusion | Desmond<br><br>Duc |

## Contents

## Executive Summary

Kim's Convenience Modern Cinema (KCMC) is a movie booking web application which provides personalised movie recommendations with the help of deep learning to create a recommendation system. KCMC believes in creating a user experience that will seek to improve retention rate, which in turn translates to savings on customer acquisition through mainstream advertisements.

KCMC's web application provides a clean and sleek user interface for users and is developed using Python's Django web development framework. Features include user authentication, booking of shows and personalised movie recommendations based on previous watch history. SQLite database is used for storing movies, shows, booking and user data. KCMC also consists of a recommendation system model trained with cinema goers' booking history data.

Upon completing the approval, initiation and planning stages, the next stage would be execution (concept development, system-level design, detailed design, testing and refinement and production). In the execution stage, KCMC development will be adopting the Software Development Life Cycle, with 1, 1, 4 and 2 weeks allocated to specification and requirements, analysis and design, implementation and testing stages respectively. At the completion stage, KCMC will continue to be closely monitored and maintained after deployment to ensure customer satisfaction. Furthermore, ISO 9000 standards will be followed for proper quality management.

## Statement of Problem

Given the theme of Activities of Daily Living, visiting the cinemas used to be a common and frequent activity of many Singaporeans. However, cinemas in Singapore faced closures due to the Covid-19 pandemic. The total number of visits to cinemas in 2020 was approximately 4.7 million, a significant decrease from 18.5 million in the previous year [1].

Disney Plus and Netflix, global video streaming services that provide viewers with extensive libraries of on-demand movies and TV shows to watch, greatly relies on their recommender system. Studies showed that 80% of stream time is achieved through Netflix's recommender system, which is a highly impressive number [2].

It is observed that all cinema chains in Singapore provide no recommender system to users. KCMC aims to help local cinema businesses to quickly recover from the impact of the pandemic by introducing a recommender system, promoting targeted advertisement.

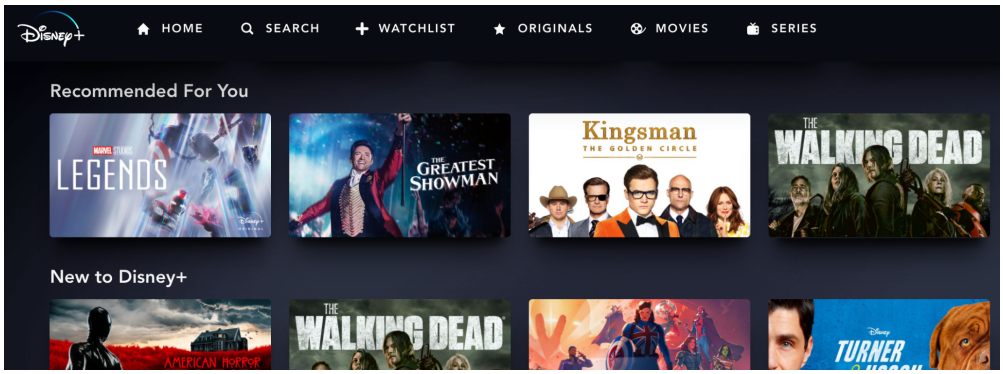



Figure 1: Disney+ Home Page

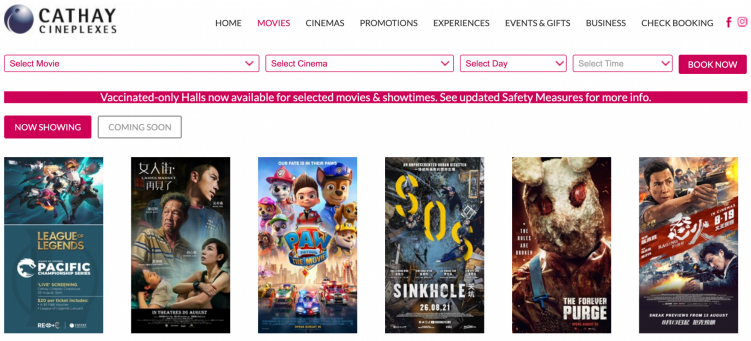



Figure 2: Local Cinema (Cathay Cineplexes) Website 'Movies' Page

## Objectives

This document proposes Kim's Convenience Modern Cinema, which aims to improve cinema goers' user experience and satisfaction, which in turn promotes a growth in revenue through increased ticket sales with the introduction of a recommender system. KCMC proposes the following:

1. Clean and easy-to-use Movie Booking Platform

   To ensure KCMC's usability and portability (desktop web, mobile web, etc.), the web will be based on simplicity and content. It will be easy to use via the help of navigation to main pages such as Home, Movies and Login via a navigation bar at the top of the page. It also promotes a simple and fuss-free booking process.

2. Targeted Advertisement to the right audience through a Recommender system

   KCMC will replicate Netflix and Disney+ row-based recommender systems. Using such a system will be intuitive to users as it is coherent when presented with a row of items that are similar. From the company's perspective, this helps to collect informative feedback. A right-scroll on the row reflects an interest in the recommendations while a scroll-down (disregarding the row) would suggest non-interest.

3. Abstain from usual Email Marketing Techniques

   KCMC will not be doing any targeted email marketing as most people deem marketing emails as spam and are often disregarded, with 89% of marketers considering their email marketing strategy unsuccessful [3]. KCMC aims to focus on user experience and would not want their efforts to be a vain attempt.

## Technical Approach

As there is a diverse age of users using KCMC, the choice of a simple and intuitive user interface to provide a pleasant users' experience. Additionally, with the intention to help cinemas save cost on customer acquisition through mainstream advertisements, data from users' booking history will be used for training the machine learning model.

### Customer Needs

An intuitive user interface further elevates user experience by reducing the time to learn, promoting retention over time and minimizing rate of errors by user. Simultaneously, strive for consistency within the visual layout and sequence of actions. Having a user-friendly user interface, will help to shorten the movie ticket purchase process.

Studies showed that Netflix's recommender system constitutes 80% of user stream time as compared to user's organic search. With a huge variety of movies to choose from, it can be difficult for cinema goers to make their choice. Having a recommender model able to accurately predict cinema goer's movie preference, will help accelerate the decision making process.

All in all, providing good user experience can potentially increase the customer retention rate and satisfaction and positively impact the cinema's business.

———Research on marketing techniques will be conducted to strengthen advertising knowledge. Further studies and reading on Netflix and Disney+ recommendation algorithms will also be done to be up to date to the latest studies.

In the testing stage, we will request permission to implement our system on local cinema chains' websites as our beta test. This can allow us to gather statistics such as user activity duration, as a reduction in duration could signify that the recommender system has sped up the movie selection decision process. We can further refine our model to produce a higher level of accuracy to predicting users' choice of movie.

For future development, cinemas may also consider using a similar algorithm to decide on the movie trailers to be played during the 10 to 15 minutes of advertisements before the screening of the movie. This can efficiently make use of the time through an intended choice of trailers to the pool of audience in the cinema hall.

## Target Specifications

KCMC will include measurements for specifications to ensure the needs of customers are met.

To accurately measure the ease of navigation through the website, the targeted specification used would be:

1) Task success rate

   The percentage of participants that successfully complete a task which helps us identify user experience issues. A high task success rate, signifies an intuitive interface.

2) Task completion time

   The amount of time it takes a user to complete a task. A short time taken, signifies the ease of usage.

3) Error rate

   The percentage of bad entries made by movie goers. The calculation will be done by dividing the number of errors by the total number of attempts. A lower error rate signifies most cinema goers can purchase a ticket without any errors.

To accurately measure the benefit of the recommender system, the targeted specification used would be:

1) Model Accuracy

   The hit rate percentage of the recommendation model. The higher hit rate percentage signifies the model is able to accurately predict the cinema goer's movie preference.

KCMC will add benefits to both the cinema industry as well as the cinema goers. It is particularly valuable for cinemas now since they are reopening and KCMC hopes to accelerate their recovery from the impact during the pandemic. It benefits cinema goers as well by providing personalised suggestions through the targeted advertisement.

## Technology Consideration

| Technology | Description |
|---|---|
| Django | Django has been selected for our KCMC web application. Django is a high-level Python web framework that enables rapid development of secure and maintainable websites. It provides support for user authentication and authorisation, integration with databases and delivering scalable, secure and versatile webpage. |
| SQLite | SQLite database will be used to store movies, shows and users |

| | |
|---|---|
| | data. SQLite is a lightweight disk-based database that implements a small, fast, self-contained, high-reliability, full-featured, SQL database engine. It is a lightweight disk-based database. |
| PyTorch | PyTorch is used to train a model which recommends movies based on the user's booking history. PyTorch is a Python machine learning framework which provides easy-to-use methods to implement and deploy machine learning models at scale. |

## System Architecture/Platform

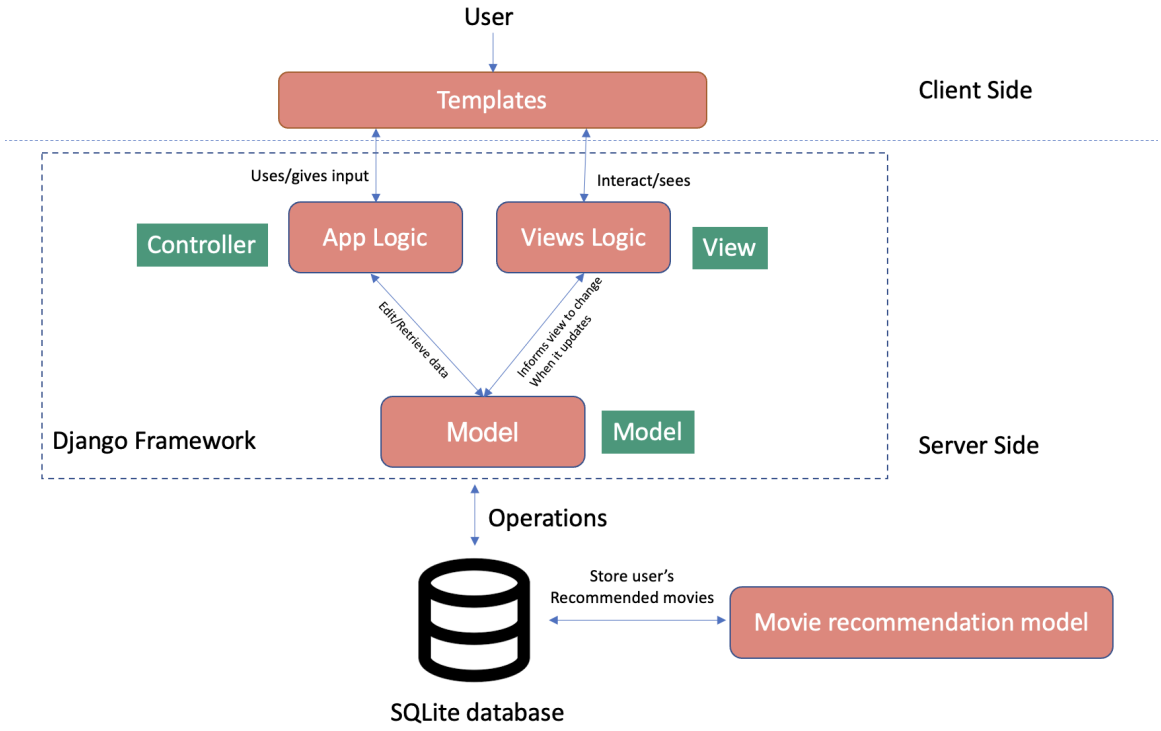



Figure 3: Proposed overview of the system architecture of KCMC

KCMC adopts the Model-View-Controller (MVC) architectural pattern which separates the application into three main logical components. The View component is the user interface of the application which the user sees. The Controller is the layer between the Model and the View which deals with processing all the business applications. The Model component corresponds to the data-related logic the user works with.

KCMC's user interface (View) is responsible for displaying information to cinema goers. It is an actual view of the web page and controls what the cinema goers will see on the application. Django uses templates to implement the front end of the application mainly using HTML and CSS.

KCMC's backend logic (Controller) is responsible for handling user interaction which receives the input and requests (get and post) from the user. Django uses views to develop and process the application logic.

KCMC backend logic (Model) handles all the data-related logics which means that it is the one that interacts with the database and handles all the data operations such as reading, writing and updating of the records. Django provides support to create Models and provides an admin portal to add, update, and delete records.

KCMC will leverage SQLite database to store movies, shows, cinema goer's profile and their booking history data which can be used to retrain the recommender model to predict cinema goer's movie preference.

## Project Management

The project team consists of five team members, Wong Ying, Hussain Khozema Kheriwala, Desmond Yap, Duc Ta, Taneja Parthsarthi and Jeremy Book. The division of responsibilities and duties of team members are as follows:

Project Manager: Wong Ying

QA Manager: Taneja Parthsarthi

QA Engineer: Taneja Parthsarthi

Lead Developer: Hussain

Front-end Developer: Desmond

Back-end Developer: Jeremy

Release Engineer/Manager: Duc

The project is broken into seven task phases, namely, planning, concept development, system-level design, detailed design, testing and refinement and production.

In the planning phase, the team will be researching on the various development frameworks and toolkits best used for the project and other background information pertaining to the project

In the concept development phase, the team will agree on what technologies, frameworks and toolkits that will be used for the project. The concept for the application will also be further explored and developed in the project proposal.

In the system-level design phase, the overall system architecture and high level system components will be designed and documented in the system requirement specification. The first application skeleton will begin development as well.

In the detailed design phase, the project plan, quality plan, risk management plan, design report, configuration management plan, change management plan, release plan, test plans will be designed and written. The best practises to be used in the project will also be finalised here.

In the testing phase, the application prototypes will be tested against various test cases to measure its reliability, robustness and completeness. These tests include black

and white box testing, user acceptance testing and browser compatibility testing. The findings from the tests will be compiled into a report for further refinement of the application. The testing of the application is done by the entire team, throughout the project under review prototype during subsequent team meetings. However, the final testing of the prototype will be done by the quality analysis manager.

In the refinement phase, the application prototype will be further refined by the developers based on the test reports to further improve it.

In the production phase, the application will be presented to the client in the form of a 15-minute presentation and released in accordance with the release plans. All reports, documents and deliverables are reviewed once more before the final submission is made. The final list of deliverables can be found below.

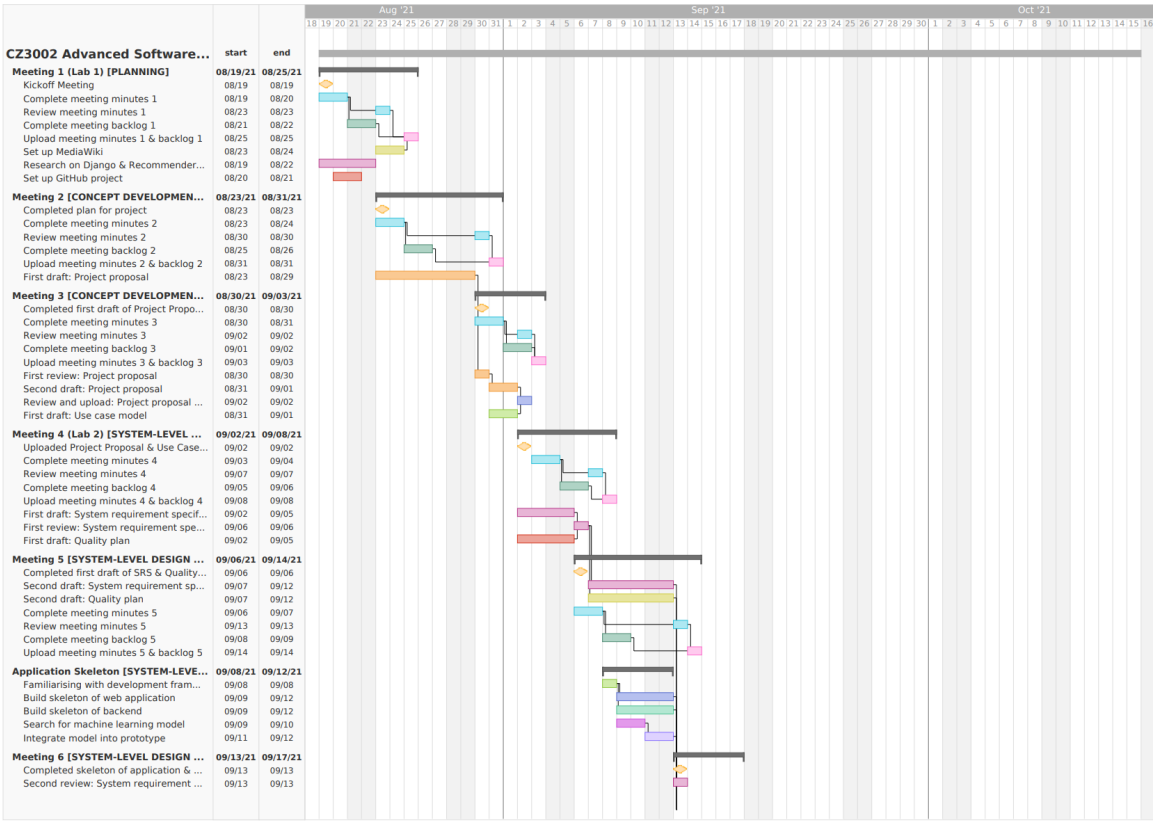



Figure 4: Part 1 of the Gantt chart detailing the planning, concept development, system-level design and detailed design phases

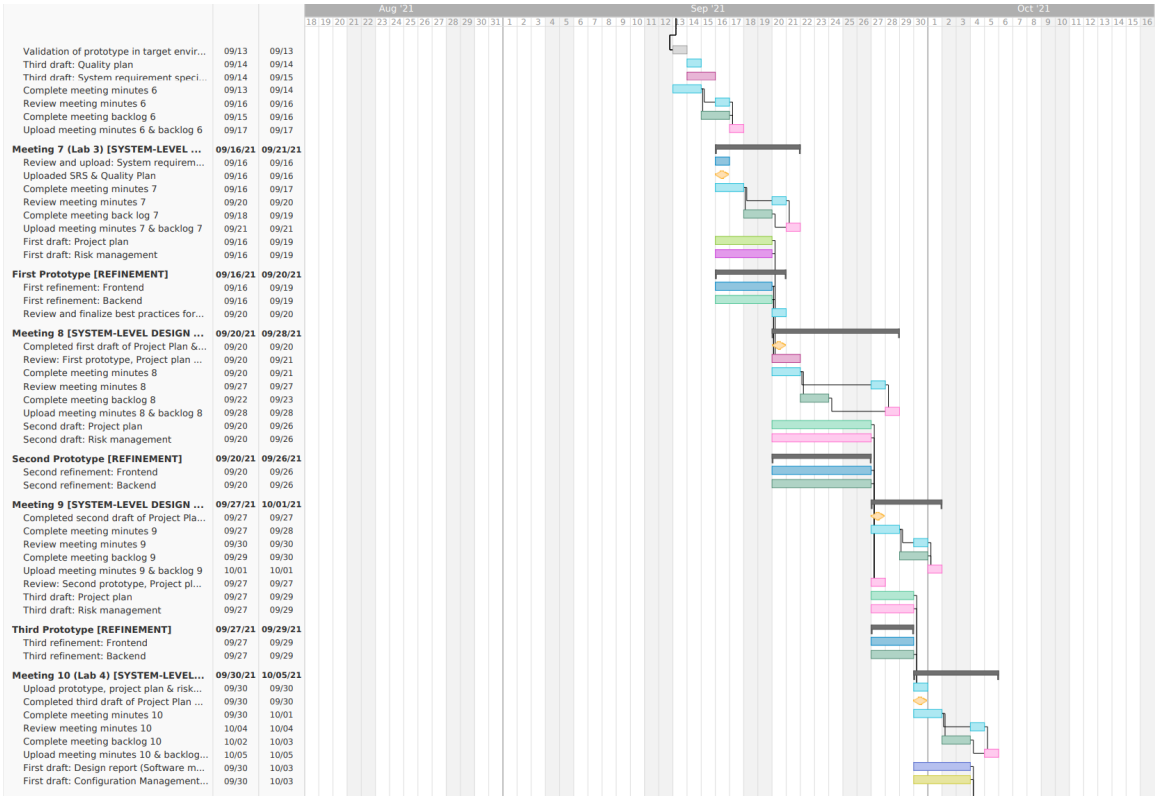



Figure 5: Part 2 of the Gantt chart shows the continuation of the system-level design and detailed design phases and the commencement of the refinement and testing

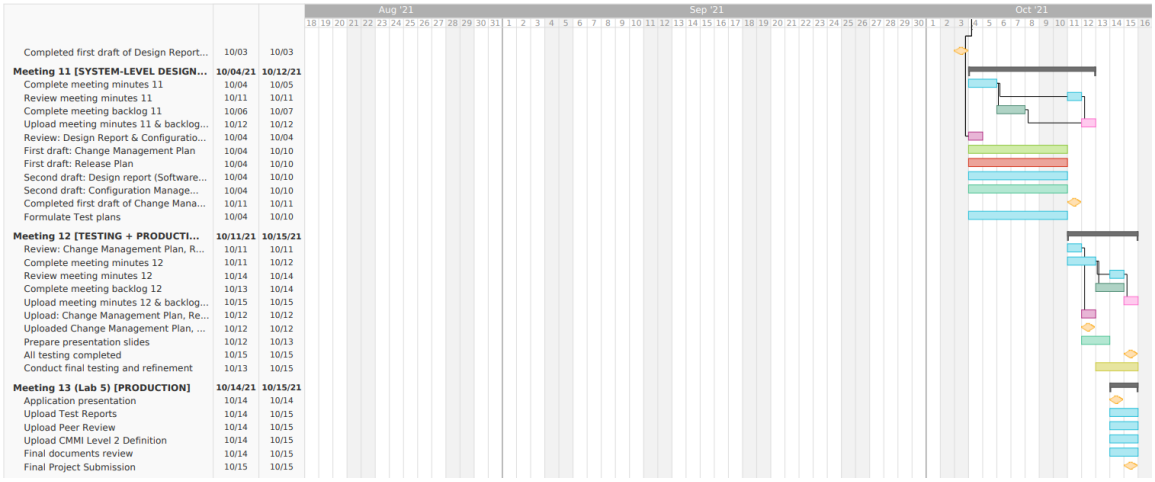



Figure 6: Part 3 of the Gantt chart detailing the final production phase of the project signifying the completion of the project

## Deliverables

Since there is no physical prototype, the first deliverable is the source code of the movie booking web application. This source code includes both the front end and back end code for the web application.

The front end code covers the entire interface of the web application for both customers and the admin. The admin interface includes allowing authorised users to sign in and edit movies, movie timings and theater settings. The user interface includes allowing customers to log in or sign up for an account, view all available movies and their timings, booking a movie and viewing the list of recommended movies.

The back end code covers the authentication function for admin users and regular customers, booking of movies function, editing movies and theater functions, interfacing with the SQLite database and the recommender system's model.

The second deliverable is the detailed description of all test procedures done and its results. Test procedures include browser compatibility testing of the web application, black and white box testing of the web application and the recommender system's model, user acceptance testing and beta testing in local cinema chains' websites. Test results and the statistics gathered during the beta test for further refinement of the model will also be provided.

The third deliverable are the diagrams used to conceptualise the application. This includes the use case diagram, class diagrams, system architecture diagram, control-flow graph, decision tree diagram, communication diagrams, component diagrams and the user interface mockup.

The fourth deliverable is the research findings on the marketing techniques used to market content to customers and popular streaming websites recommendation algorithms such as Netflix and Disney+.

The fifth deliverable is documentation of the software. This includes the software requirement specification and all of its necessary components.

The sixth deliverable is the monthly web application monitoring and maintenance report. The reports will include monthly statistics on user activity, issues found during maintenance and the actions taken to rectify the issues.

The last deliverable is the user manual for the use and general maintenance of the web application. The user manual will detail a step by step guide on operation of the web application and solutions to common issues.

All deliverables will be handed on 14 October 2021.

## Budget

| Category | Project Expenditures | Price | Quantity | Total |
|---|---|---|---|---|
| Hardware | Computers | $1000/unit | 6 | $6000 |
| Software | SQLite | $6000 (one time fee) | 1 | $6000 |
| | Private Git Repository | $24/month | 4 | $96 |
| | Development SDK (Oracle) | $5000 (one time fee) | 1 | $5000 |
| | Domain and Hosting (GoDaddy) | $779.52/year | 1 | $779.52 |
| Manpower | Project Manager | $6000/month | 4 | $24000 |
| | Lead Developer | $4800/month | 4 | $19200 |
| | Front-End Developer | $4250/month | 4 | $17000 |
| | Back-End Developer | $4250/month | 4 | $17000 |
| | QA Engineer /Manager | $4600/month | 4 | $18400 |
| | Release Engineer /Manager | $4250/month | 4 | $17000 |
| Miscellaneous | Printing, Paper, Photocopy, Transport | $1000 | 1 | $1000 |
| | Rental | $450/month | 4 | $1800 |
| | | | Implementation cost: | $133275.52 |
| Contingency | Contingency | 10% of Implementation costs | - | $13327.55 |
| Maintenance | Private Git Repository | $24/month | 12 | $288 |
| | | | Total: | $146891.07 |

## Communication and Coordination with Sponsor

Weekly update reports will be given to the Clients and Sponsors via email or online meetings by the Project Manager. In addition, monthly meetings will be held among Project Manager, Clients and Sponsors to keep all parties informed on the project progress and to ensure that objectives are being met.

The Project Manager will be the main point of contact so as to minimise the risk of miscommunication and ensure communication efficiency. For monthly meetings, individual team members will be invited to join if their expertise is needed. At the meetings, the Project Manager will showcase the latest build of the application so that the sponsors can accurately evaluate the progress and provide relevant feedback.

In case when issues arise during the development process that require changes to be made to the functional requirements, the Project Manager will update the Sponsors as soon as possible and hold a discussion to resolve the issues.

## Team Qualifications

Wong Ying has 3 years of coding experience from being an undergraduate from Nanyang Technological University (NTU). She has completed her Professional Internship which lasted around 5 months with Shopee Singapore Private Limited, as a Salesforce Developer. That has gained her insights of a big organisation's internal work and she received close mentorship from the senior members of the team. She also has past experience from leading other projects in NTU, such as the Multidisciplinary Project (MDP).

Jeremy is a final year student in Nanyang Technological University, studying Computer Science. He has previously worked at various companies such as Singapore Powers and Procter and Gamble where he spearheaded projects. Using his technical expertise in machine learning and deep learning frameworks, he has moved projects forward with promising results.

Hussain is a final year computer science student at NTU and has 5+ years of programming experience. He interned at Shopee, which allowed him to gain insights on building end to end products and pipelines. He was also involved in various projects at NTU, picking up paramount technical skills for development, involving both front end and back end. He also led the android team to develop an application for the Multidisciplinary Project (MDP) module.

Desmond is currently studying computer science in his penultimate year at NTU. Throughout his time in NTU, he has picked up a variety of technical skills such as Python, Java, C, C++ and SQL. He has also led projects in a variety of areas such as implementing database applications from the bottom up and creating object oriented applications. In his free time, he is learning more about developing web based applications and back end development.

Duc is currently in his final year of study at NTU, majoring in Computer Science. Throughout his undergraduate time, he has handled deployment and releases management

for the development teams of various projects. His knowledge and presence have always led to the product's successful deployment, which is why he is a suitable candidate for the Release Engineer/Manager role.

Parthsarthi is currently a final year student at NTU, majoring in Computer Science with double minors in Business and Entrepreneurship. During his time at NTU and his internships at KPMG, OCBC and Shopee, he has nuanced the art of project management. He has overseen the delivery and deployment of successful projects in diverse industries. His experience will come in handy with him being the Q&A Manager.

## Conclusion

To conclude, our team aims to provide a web-based platform to improve cinema goers' user experience and satisfaction through the use of a recommendation system. Our platform will be intuitive to users, the cinema goers, while also providing greater informative data to cinema businesses. We believe this project will be a great help to local cinema businesses in the process of recovering from the impact of the pandemic and also in the future.

## References

[1] Statista, “Number of visits to cinemas in Singapore from 2011 to 2020,” *https://www.statista.com/statistics/1020951/cinema-attendance-numbers-singapore/* (Singapore, June 2020).

[2] Towards Data Science, “Deep Dive into Netflix’s Recommender System,” *https://towardsdatascience.com/deep-dive-into-netflixs-recommender-system-341806ae3b48* (David Chong, 30 Apr 2020).

[3] Digital Agency Network, “Is Email Marketing Still An Effective Strategy?” *https://digitalagencynetwork.com/email-marketing-still-effective-strategy/* (Miriam Reis, 18 January 2019).

# Appendix A:
# Résumés of Team Members

## Wong Ying

**WONG Ying| Mobile No.: 93621108**
**Email: wong1131@e.ntu.edu.sg | LinkedIn: linkedin.com/in/wong-ying-0967811a4/**

**SUMMARY**

Motivated and detail oriented undergraduate student majoring in Computer Science. Adept at motivating self and others. Ready for challenges and exploration of various avenues. Great interest to have a deeper look into the field of information technology. Motivated to pick up new skills and gain a fulfilling experience while bringing my utmost dedication to the company.

**WORK EXPERIENCE**

**Shopee Singapore Private Limited Regional Business Development** Jan 2021 – May 2021
**Salesforce Developer Intern**

- Work on Salesforce Force.com platform
- Develop small projects using Force.com, APEX, Lightning, and other technologies.
- Perform unit testing, integration testing, and performance testing of new product functionality
- Implement enhancements on existing project
- Troubleshoot and fix bugs/issue on existing project

**EDUCATION**

**Nanyang Technological University, Singapore** Aug 2018 – May 2022
**Bachelor of Engineering (Computer Science)**

- Expected Honours - Second Class, Upper

**SKILLS**

Languages: Java, C, Python Database Management: MySQL, Firebase
Tools: Unity Engine, Android Studio, Eclipse, Microsoft Office, AutoCAD, MATLAB,
Salesforce Courses: Algorithm, OODP, Data Structure, Discrete Mathematics,
Soft Skills: Communication, Self-Management, Teamwork, Problem Solving

**ACADEMIC PROJECT**

**Nanyang Technological University, Singapore**
**Software Systems Analytics and Design** Feb 2020 – May 2020
Title: Software Arena

- Developed a mobile game application using Unity in a team to create fun learning game for NTU students

**Software Engineering** Feb 2020 – Apr 2020
Title: Building the Smart Nation (HealthFit)

- Developed a react native mobile application which exploits the government data to assist users in achieving healthy lifestyle in a group
- Integrated firebase cloud firestore into the mobile application

**SCSE HackFest 2020** Jan 2020 – Jan 2020
Title: Learning Tool/Application

- Developed a web application using HTML which aims to help students understand various subjects better
- Created features such as a discussion forum with a voting system utilizing JavaScript

**Object Orientated Design and Programming** Oct 2019 – Nov2019
Title: Movie Booking and Listing Management Application (MOBLIMA)
• Designed a movie booking and listing application utilizing UML Class and Sequence diagrams • Produced an application collaboratively as a group with Java and applied Object-Oriented Design concepts

**Introduction to Data Science and Artificial Intelligence** Mar 2019 – Apr 2019
Title: What's Cooking

- Created application using machine learning to predict cuisine with list of ingredients used, attained an accuracy of 69%

## Jeremy Book

**Jeremy Book| Mobile No.: 81236088| Email:jeremy.b@live.com.sg |**
**LinkedIn: www.linkedin.com/in/jeremybky**
**Github: https://github.com/CScookie**

**EDUCATION**

**Nanyang Technological University, Singapore** Aug 2018 – Present
**Bachelor of Engineering (Computer Science)**

- Expected Honours (Distinction), Second Upper Class

**INTERNSHIP EXPERIENCE**

**Procter and Gamble, Singapore** May 2021 – August 2021
**Data Scientist, Intern**

- Led a project with objectives to minimize media overlap (TV and digital Ads) and maximize audience reach.
- Performed Exploratory Data Analysis to identify consumer's digital consumption habits trend and proposed optimization solution.
- Formulated optimization solution which results in an increase of 8.5% audience reach.

**Singapore Powers Group (SP Group)** Jan 2021 – May 2021
**Data Scientist, Intern**

- Developed logging functionality to existing Data Science Pipeline which enables user to identify Pipeline current process and aids Data Scientist in Debugging.
- Developed a Minimum Viable Product Data Science Pipeline to read electric meter's reading and ID with an accuracy of 75% using Keras Optical Character Recognition and YOLO object detection model.

**Courses and Certifications**

| | |
|---|---|
| ICDL Digital Marketing, NTUC Learning Hub | Feb 2021 |
| Finance for non-financial professionals | Jan 2021 |
| Introduction to Big Data, Coursera | Jan 2021 |
| The Complete 2021 Flutter Development Bootcamp with Dart, Udemy | Jan 2021 |
| Python for Time Series Data Analysis, Udemy | Jan 2021 |
| Natural Language Processing(NLP), Udemy | Aug 2020 |
| The Data Science Course 2020: Complete Data Science Bootcamp, Udemy | Jul 2020 |
| The 2019 Complete Web Development Bootcamp, Udemy | Jan 2019 |

**SKILLS**

Languages: Proficient in English and Chinese

Digital Skills: Python (Include libraries: Pandas, numpy, scikit-learn, Tensorflow, PyTorch, Keras), Data Cleaning, Natural Language Processing, Machine Learning, mySQL, MsSQL, Tableau, Statistic, Flutter, React Native, Microsoft Office(word, excel, powerpoint), HTML, CSS, JavaScript, React Native, Java, C, C++, Adobe Photoshop.

Soft Skills: Good problem Solver, Good interpersonal and communication skills, ability to work in team or independently, ability to work under pressure, detail-Oriented.

**HOBBIES & INTERESTS**

Travelling, Photography , Gym

**Hussain Khozema Kheriwala**

# Hussain Khozema Kheriwala

Phone: +6592397414 | Email: hussain.kheriwala99@gmail.com
https://www.linkedin.com/in/hussain-khozema

## SUMMARY

I am a final-year undergraduate student majoring in Computer Science and have a great passion for the work I do. I have over 5 years of programming experience mainly in python and have hands-on experience in various fields such as Data Science, Data Engineering, Web and Mobile development, etc. I am always willing to go outside my comfort zone and take up new challenges. I am looking to contribute to the information technology (IT) field where I can learn and apply new skills and gain experience while bringing outstanding dedication to the company.

## RELEVANT EXPERIENCE

**Shopee** Dec 2020 – Aug 2021

**Data Engineer Intern**

- Design and grow Shopee's data warehouse, build reliable and smart ways to ingest data to the warehouse
- Design, build and maintain real-time data pipelines in production with airflow-enabled workflows and data validation tools
- Optimise existing data architectures and pipelines to meet critical product and business requirements.
- Gain insights into the Southeast Asian market and the e-commerce industry
- Worked with and gained experience in using big data tools such as Apache Spark, Hadoop, and Hive

**NCS Pte Ltd** Dec 2020 – Aug 2021

**Research Assistant (NTU URECA)**

- URECA is a year long program invitation-only program offered to outstanding second and third-year students.
- Research topic: Machine Reading Comprehension for Question Answering
- Implemented a question answering system for Nanyang Technological University's (NTU) GEM Explorer program
- Acquire first-hand research experience skills, including conducting literature survey, creating a poster and writings a research paper

**Human-e** Jun 2020 – Aug 2020

**Machine Learning Engineer intern**

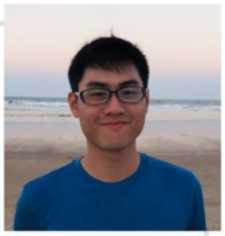
- Researched Natural Language Processing (NLP) techniques and Machine Learning models
- Building and testing models involving large amounts of unstructured text data and exploring pre-trained deep learning models such as BERT for custom use
- Hosting a private python PyPi server via serverless API gateway in Amazon Web Services to store python packages
- Gained and leveraged knowledge on Amazon Web Services and Google Cloud Platform cloud machine learning services
- Gained and leveraged knowledge on S3 and PostgreSQL database
- Worked on Continuous Integration and Continuous Delivery to automate building, testing, and packaging of APIs

**Nanyang Technological University** Jun 2019 – Aug 2019

**Research Assistant**

- Worked on privacy-preserving machine learning focused on differential privacy
- Explore Feedforward and Convolutional Neural network models Pytorch and MNIST dataset
- Compared the accuracy between a differentially private and a regular Neural Network model for the MNIST dataset.
- Created an adversarial network to simulate a membership inference attack on a deep learning model.

**Desmond Yap**



# DESMOND YAP

**ASPIRING SOFTWARE ENGINEER**

I'm a Computer Science sophomore at Nanyang Technological University looking for an internship opportunity to expand my knowledge and acquire industry experience.

## CONTACT INFO

9228 7810

desmondyqy@gmail.com

@desmondyqy

## SOFT SKILLS

Leadership

Adaptable

Reliable

Critical Thinking

Effective

Communicator

## EDUCATION

**BACHELOR OF ENGINEERING WITH MINOR IN BUSINES (COMPUTER SCIENCE)**

**NANYANG TECHNOLOGICAL UNIVERSITY** | JUL 2019 - PRESENT
Cumulative GPA: 4.30/5.00

## ACADEMIC PROJECTS

**DATABASE APPLICATION**
Implementation of a database application

- Led a team of five students in designing, coding, and implementing a SQL database.
- Analyzed problem statement and constructed an Entity-Relationship diagram.
- Implemented database schema using SQL DDL commands.

**OBJECT-ORIENTED PROGRAMMING AND DESIGN**
Building an object-oriented application

- Analyzed problems and identified key features and specifications required in the application.
- Constructed UML model and sequence diagram for the application.
- Implemented application in Java.

## PROGRAMMING LANGUAGES

Python • Java • C • SQL • HTML • CSS • JavaScript

## AWARDS & ACHIEVEMENTS

- Edusave Good Progress Award 2015
- Edusave Scholarship 2014
- Outstanding Performance 2013 GCE N Level
- Edusave EAGLES Award 2012

## Ta Anh Duc

**TA ANH DUC**
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### EDUCATION

**Nanyang Technological University, Singapore** **Aug 2018 - May 2022 (Expected)**
**Bachelor of Engineering in Computer Science**
- Expected Honours (Highest Distinction)
- Elective Focus in **Cyber Security** and **Networking & Mobility**

### ACADEMIC PROJECTS

**NTU Singapore**

**iRead** **Feb 2020 – Apr 2020**
- Worked in a team of 4 members
- Created an Android Single Activity app in Java that provides recommendation on books to users
- Used machine learning algorithm to recommend books based on a user's reading list and preference
- Provided a space for book readers to connect and share their book recommendations.

**Movie Booking and Listing Management Application (MOBLIMA)** **Oct 2019 – Dec 2019**
- Applied Object-Oriented (OO) Design concepts to develop a movie booking application in Java.

### WORK EXPERIENCE

**Cyber Security Research Centre @ NTU (CYSREN)** **Aug 2020 – Dec 2020**
**Computer Vision Intern**
**Project name: Designing Low-cost Vision-based Sensors for Traffic Monitoring**
- Performing accuracy-runtime trade-off analysis and refining trained object detection model
- Evaluating trained models on embedded platform (Odroid XU4)
- Applying quantisation techniques - post training quantisation and quantisation-aware training to reduce the model size/runtime.

**Earth Observatory of Singapore** **Sep 2019 – Aug 2020**
**Student Assistant**
- Worked closely with EOS to analyze data on volcanoes.
- Set up a website that display the analysis on various aspects of volcanoes.

### SKILLS

**Digital Skills:**
- Proficient in Python Programming, C++ Programming, Java Programming
- Have knowledge about operating systems (Linux and Windows)
- Have good foundation in Internet protocols (TCP/IP) and knowledge about networking concepts
- Have coursework experience on malware analysis and software security

**Taneja Parthasarthi**

# PARTHASARTHI TANEJA

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## EDUCATION

**Nanyang Technological University, Singapore**

***Bachelor of Engineering (Honours); Major: Computer Science, Minors: Entrepreneurship, Business*** *Aug '17 – Dec'21*

- On track to graduate with Honours (Merit) in December 2021 with 3.65/5; currently pursuing my Final Year Project on stock market prediction.
- Undergraduate Research on Campus (URECA) Candidate: Invite-only program offered to top 10% of the cohort
- Relevant Coursework: Computational Thinking, Data Structures, Algorithms, Databases, Business Finance, Commodity Markets, Investments
- Co-Founded a start-up, HallO, as part of Minor in Entrepreneurship; broke even in the first semester of operation.
- Among the top-4 students selected from NTU for an overseas exchange semester at **Purdue University, USA**.

**Modern International School, New Delhi**

***All India Senior School Certificate Examination (A-Level Equivalent)*** *Apr '15 – May '17*

- School Topper with 97.5% with 99 in English, 98 in Chemistry, 97 in Maths and Physics. Recognised by Minister of Human Resources as the top 1% of the national cohort in English and top 5% of the national cohort overall.
- Scored 1510/1600 on the SAT and achieved a score of 800/800 for each of the SAT Physics, Chemistry and Mathematics-II Subject Tests.

## WORK EXPERIENCE

**KPMG, Singapore**

***Strategy Consulting, Winter Intern*** *Dec '20 – Jan '21*

- Developed review reports for a major player in the FMCG space identifying critical areas of vulnerability, corrective action plans, and financial exposure related to changes in global Cyber Security policies due to Covid-19.
- Led cyber opportunity analysis of Singapore for a multinational client through industry expert interviews and secondary research; led hypothesis-driven discussion with team to develop insights and eventually presented findings to key client stakeholders.
- Assisted senior management with the preparation and conduct of cyber security awareness sessions for C-suite and members of the Board of Directors of clients across multiple sectors and markets.

**OCBC Bank, Singapore**

***FX-Trading, Semester Analyst*** *Dec '19 – Aug '20*

- Worked as an equal member of a 4-person team assigned to the keystone project. Led intensive back testing, performance measurement and improvement of FX hedging algorithm implementing Machine Learning for 3 different currency pairs, achieving a 40% improvement in the P&L.
- Led extensive streamlining, refactoring and deployment of automation techniques for recurring tasks such as trade (spot/swap) volume reporting, identification of trade limit breaches etc. resulting in time gains north of 65% each using Python (Pandas, NumPy) and R.
- Conducted a Python workshop for all the Global Treasury interns aimed at helping them use, customize and debug automation strategies put in place by our team, which were then implemented in other teams such as Global Corporate Banking and Institutional Sales.
- Provided proactive support to front-office functions such as trade amendments, crossing over cashflow positions as well as back-office functions such as dealing with price engine related queries and managing daily record of market tick logs for quantitative analysis.

**Shopee, Singapore**

***Analytics, Summer Intern*** *May '19 – Aug '19*

- Increased the work efficiency of the team by 33% by simplifying the data collection process by creating a desired data scraper using Python, systemizing daily Excel processes using macros and VBA, and optimised database querying methods for a warehouse migration project using SQL.
- Facilitated analysis and compilation of financial performance, to formulate the present and forecasted budget of our team using different extrapolation methods for the finance team to keep track of the yearly performance vs. target.
- Implemented a series of intern sharing sessions for all interns within the division to network with each other, widely appreciated by both interns and HR and now a formal part of internship program at the firm.

## EXTRACURRICULAR ACTIVITIES AND LEADERSHIP EXPERIENCE

**NTU Inter-Varsity Debate**

***Debater and Training Head*** *Aug '17 – Dec '18*

- Participated and won 'Best Debater' in the Amateur category in NTU Pro-Ams 2017 and NTU Dorothy Cheung Championship 2018.
- Led weekly training programs (Attendance: 20+) on various topics such as Economics, Law, Politics, Global Affairs and Financial Markets.

**NTU IEEE Student Chapter**

***Vice President (Finance) and Honorary General Secretary*** *Aug '17 – Dec '18*

- Managed a team of 20 members to successfully organise Singapore's largest student-led and NTU's only 24-hour hackathon, 'iNTUition'.
- Organised a series of workshops (Attendance: 60+) to introduce coding to students pursuing non-STEM majors at NTU. Taught Python and its application in finance as part of the program.

**NTU Risk Management Society**

***Market Research Analyst*** *Aug '18 – Jun '19*

- Responsible for tracking S&P500, NYSE, DJIA for the duration of an year highlighting the American equities' risk landscape and exposure and supervised the bi-weekly Risk Management Newsletter (Readership: 50+)
- Conducted training sessions for members on multiple risk management tools like VAR (Value at Risk) and its statistical implementation.

## PERSONAL

- **Certifications & Competitions:** CFA Level-1 (February 2022) Candidate ; Bloomberg Market Concepts Certificate ; MayBank Go Ahead Challenge 2019 (Singapore Finalist); CFA Ethics Challenge 2020 (Singapore Semi-Finalist); HSBC Private Banking Challenge 2020
- **Hobbies and Interests:** Football (NTU Inter Hall Games), Cricket (Purdue Cricket Club), Stand-Up Comedy, Board Games, Rap Music, Gaming
- **IT Skills:** Python, C, C++, R, Java, HTML, MATLAB, React, CSS, SQL, VBA, Tableau, MS-Office, Bloomberg Terminal, Reuters Eikon