RMIT University Vietnam

COSC2634 Project Proposal

Kronicle – Website for K-pop fans to buy and sell cards

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1. Executive Summary

There is currently no centralized and specialized platform for Vietnamese to buy and sell K-pop cards, as this product is usually scattered on Facebook groups and some e-commerce sites. Hence, this project will provide a more centralized and convenient way for K-pop fans in Vietnam to buy and sell cards. The expected outcome is a website where users can upload the card they want to sell and buy or bid on the card they want to purchase. There is also a web app that allows user to scan their cards and see their information.

2. Problem Statement

As the K-pop industry is growing significantly, the K-pop photocard market is also very popular and in high demand. To buy or sell K-pop cards, K-pop fans in Vietnam usually join buy-and-sell (BAS) Facebook groups dedicated to specific K-pop bands. However, if someone is a fan of many K-pop groups, they must join many BAS groups, which is not very centralized or convenient. Furthermore, cards of popular K-pop group members or rare cards usually sold out very quickly. Hence, a fan does not have much chance of buying a special card if they are not quick enough (refer to Appendix A for more details).

3. Goal and Objectives

Our goal is to provide a centralized and more convenient way for Vietnamese to sell and find photocards related to any K-pop group. To do this, we will develop an e-commerce website that allows users to buy or bid on their desired cards. The bid function also gives fans more chance to buy rare cards as getting a special card now depends on how much you are willing to pay for it instead of how quickly one can see and buy it. We will also develop a web app so that users can scan and get some information about their cards.

4. Deliverables and Target Customer

- Deliverables

Product	Description
K-pop buying/ selling card website	- Users can list a card with its image and information to sell it - Users can buy a card at the price the seller listed, or bid the card at their desired price
AI card analysis app	The app scans a card and displays its information

- Our main target customers are K-pop fans who want to collect K-pop albums and trading cards.

5. Technical Plan

5.1. Methodology/ Approach

We use Agile methodology for the project, which means we divide the work into many sprints. Each sprint lasts for 1 week, and each member will develop and test individual features of the product during a sprint. At the end of the sprint, we will have a meeting to review what we have done, fix bugs, and plan for our next sprint. We use Trello as our tool to manage the workflow and documents of our project.

5.2. Application Features

Our project is a website for K-pop fans to buy and sell K-pop photocards. For selling, users can upload and enter the information of the cards they want to sell. If users want to buy a card, they can either bid the card at their desired price or buy the card with the price the seller listed. The Home page will display all the latest cards and bids, as well as a link that leads to the AI card analysis app, where users can scan the card to see the card's basic information.

5.3. Tools and Resources

- ReactJS: front-end (React n.d.)
- Google Firebase: backend, database (Firebase n.d.)
- Trello: project management (Trello n.d.)
- Microsoft Teams: communication (Microsoft n.d.)

- Figma: UI/ UX design (Figma n.d.)
- GitHub: version control (GitHub n.d.)

5.4. Challenges

Our project aims to build many features for the website and some of them are very complex. With the time limit, we might not be able to fully develop all of them. Hence, we will try to finish all the features listed in *5.6. Timeline Plan*, and we may implement other additional features like Policy pages if possible.

5.5. Evaluation

For evaluation, we will run the website on different browsers and at different screen sizes to test compatibility and responsiveness. We will also evaluate the accuracy of the website by cross-checking the data that is submitted to/ displayed on the website with the data in the database. For example, the data that users enter when uploading their cards must appear the same in the database.

5.6. Timeline Plan

TECHNICAL TASKS/ FEATURES	MEMBER(S)	PERIOD	START-END	DELIVERABLES
Home page, Cart page, All cards page	Manh			
2 Listing pages, Profile page	Thu Tran			
3 Checkout pages	Linh	W5-W6	3/28 - 4/10/2022	Frontend
Login, Signup pages	Thu Hua			
Header, Footer, Card Detail & BID pages	Nhi			
Functional Testing	All			
Setup Firebase	Nhi, Manh	W6	4/4 - 4/6	
Listing functionality	Thu Tran			
BID functionality	Nhi, Manh			
Sign in + register logic, fetch data for user profile	Thu Hua			
Fetch data of latest cards for Home page and all cards for All cards page	Linh	W7-W10	4/11 - 5/5	Backend
Cart logic	Manh			
Fetch data of a specific card for Card Detail page	Nhi			
Functional Testing	All			
Scan/ upload functionality				
Classify cards	Thu Tran, Linh	W9-W10	4/25 - 5/5	Flask Python Scanning App
Display info of cards				
Functional Testing				

6. Management Plan

6.1. Project Schedule

PHASE	TASKS/ ACTIVITIES	MEMBER(S)	PERIOD	START-END	MILESTONE	DELIVERABLES
Requirement Specification + Design	Setup management tool (Trello)	Nhi	W1	2/28 - 3/6/2022	Team formation	Project Proposal + Figma prototype
	Setup communication channels (Teams, Messenger)	Thu Tran	W1	2/28 - 3/6		
	Brainstorm, discuss & select idea	All	W1	2/28 - 3/6	Project Idea Formation	
	Determine features and their priority	All	W2	3/7 - 3/13		
	Setup GitHub organization and repository	Nhi, Manh	W3	3/14 - 3/20	Project pre-development	
	Figma design & prototype	Thu H, Thu T	W3-W4	3/14 - 3/27		
	Write project proposal	All	W3-W4	3/16 - 3/27		
Development	refer to 5.6. Timeline Plan					
Testing	System Testing (test the whole system)	All	W10	5/5 - 5/8	Testing	Functional localhost website
Deployment	Deploy frontend on Netlify	Nhi	W10	5/8	Deploy system online	Functional web available online
	Deploy Flask Python App	Thu, Linh	W10	5/8		Functional app available online
Product Delivery	Prepare for project demo & presentation	All	W11-W12	5/9 - 5/18	Deliver product to customer	Demonstration & presentation of project
	Demonstrate project	All	W11	5/12		
	Present project	All	W12	5/19		
	Write Peer Review & Reflection	All	W12	5/18 - 5/21		Review & reflection
	Write Final Report	All	W11-W12	5/9 - 5/22		Project Report

6.2. Project Team
Below are the roles available in the project as well as the tasks and responsibilities of each role:

- Project Manager: plan project, manage workflow and tasks, oversee members
- GitHub administrator: setup repository and organization on GitHub, determine GitHub workflow
- UI/ UX designer: design the interface of the website using Figma
- Full-stack developer: develop both the frontend and backend of the web
- Machine Learning Engineer: develop Machine Learning pipeline for a scanning app
- Minute Taker: record important notes and ideas in every meeting

MEMBER	SKILLS	TASKS
Doan Yen Nhi	• Frontend: HTML, CSS, JavaScript, ReactJS • Backend: PHP, MongoDB, NodeJS, Firebase • Database: MySQL, MongoDB Atlas, Firestore	• Project Manager • GitHub admin • Fullstack developer
Du Duc Manh	• ReactJS • ExpressJS, MySQL, MongoDB Atlas	• Fullstack developer • GitHub admin
Nguyen Hoang Linh	• Front-end: ReactJS • Backend: NodeJS, Firebase • Database: Firestore	• Fullstack developer • Machine Learning Engineer
Tran Ngoc Anh Thu	• Frontend: HTML, CSS, JavaScript • Backend: MongoDB, AWS • Database: SQL Server, SQLite	• UI/UX designer • Machine Learning Engineer • Fullstack developer
Hua Minh Thu	• Frontend: HTML, CSS, JavaScript • Backend: PHP • Database: MySQL	• UI/UX designer • Fullstack developer • Minute Taker

7. Limitation
CNN Model Accuracy (refer to Appendix A for more details): Since most available photocard photos are shot with multiple small sizes of an individual card in an image, our model will not be able to pick up on the distinguishing aspects that aid in image identification. Hence, the system may not identify and classify our cards correctly. To improve the accuracy, we will acquire more qualified data by taking photos of our real cards from various angles and using the data augmentation technique.

8. Significance
Firstly, two alternatives to our website are Facebook groups and e-commerce platforms like Shopee, eBay, and Lazada, but the cards are usually scattered and are not the main products of these e-commerce sites. As a result, it can be challenging to find the desired cards, especially if a user is a fan of many Kpop groups. Hence, Kronicle is a solution worth developing because it provides a centralized and specialized K-pop photocards platform in Vietnam. Furthermore, Kronicle differentiates itself by adding the Bid function that allows sellers to get the best deal and buyers to get the photocard they need, especially if the card is rare. Another unique feature of our system is the scanning app that uses the CNN model to categorize, verify, and authenticate the photocard.

9. Conclusion
Kronicle is an e-commerce website that will exploit the K-pop photocard market in Vietnam by implementing buy now, bid, and deep learning web app features that bring the best card deal for sellers and buyers. Though the primary challenges are the complexity of features, we will acquire consumers' trust by ensuring that each stage is completed with high-quality and professional manner.

References

React (n.d.) *React - A JavaScript library for building user interfaces*, React website, accessed 25 March 2022. https://reactjs.org/

Firebase (n.d.) *Firebase helps you build and run successful apps,* Firebase website, accessed 25 Match 2022. https://firebase.google.com/

Trello (n.d.) *Trello helps teams move work forward,* Trello website, accessed 25 Match 2022. https://trello.com/en

Microsoft (n.d.) *Microsoft Teams,* Microsoft website, accessed 25 Match 2022. https://www.microsoft.com/en/microsoft-teams/group-chat-software

Figma (n.d.), *It's time to design on your terms,* Figma website, accessed 25 Match 2022. https://www.figma.com/design/

GitHub (n.d.) *…,* GitHub website, accessed 25 Match 2022. https://github.com/

Appendix A: Background information

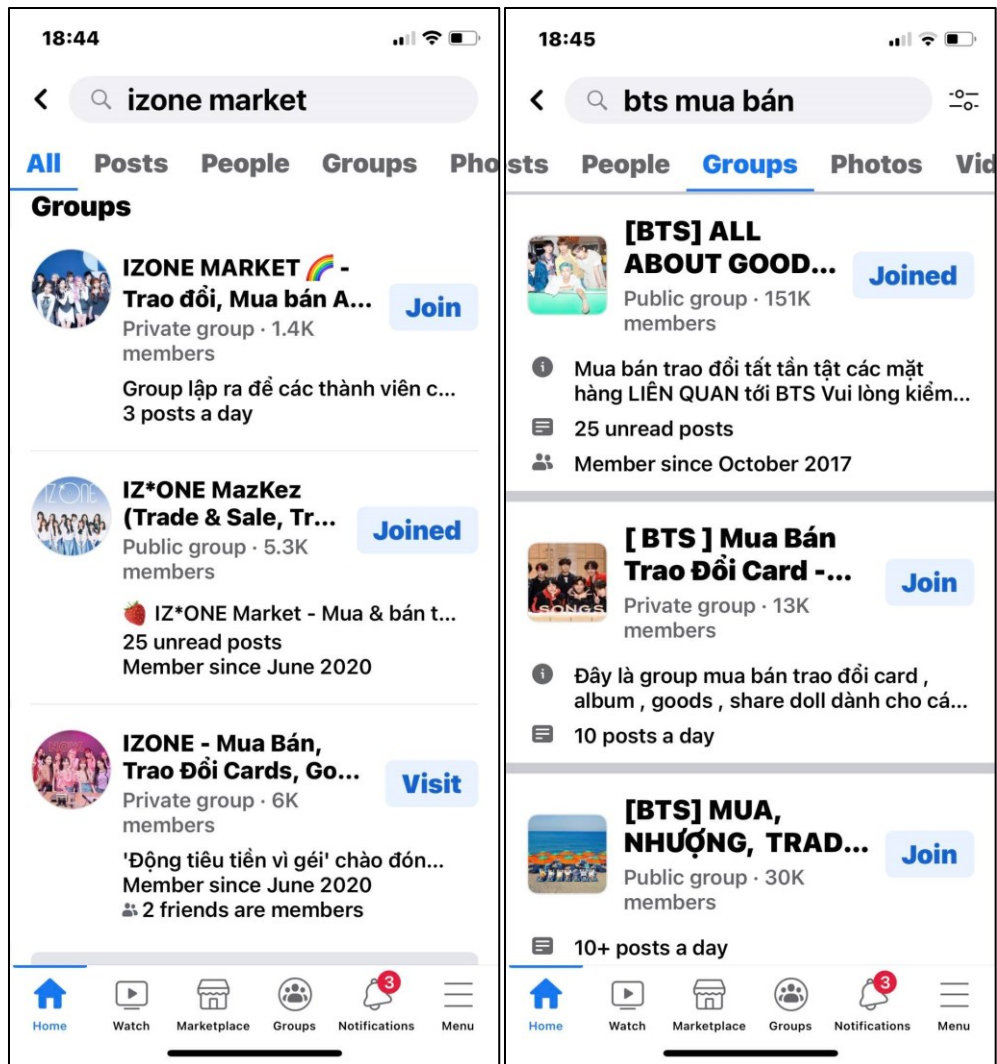*1. Kpop and Kpop cards*

- Background of K-pop industry:

K-pop stands for Korean popular music which is mainstream music that originated from South Korea. The most distinctive feature of the K-pop industry is that the physical CD market is still on the rise during the age of online streaming. However, people no longer buy CDs and listen to them, but collect them as a hobby or an action showing support towards their favorite K-pop idols. This is because album sales are counting towards their idols' success so that these K-pop groups can reach higher in rank on music charts and get high popularity.
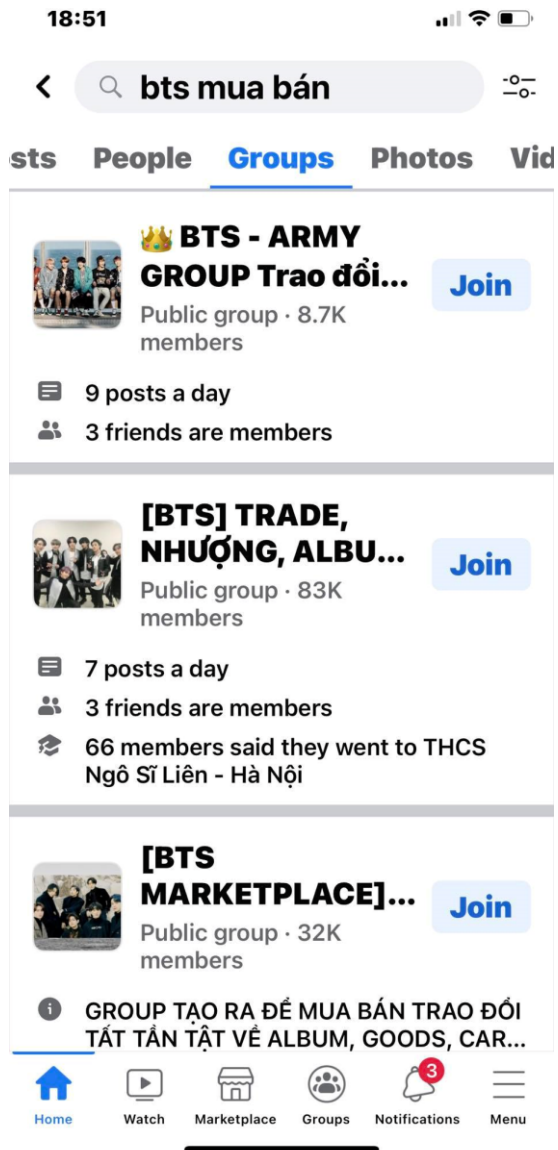
- What are K-pop photocards?

K-pop photocards are one of the most popular K-pop merch items to collect. These cards are printed with unreleased pictures of K-pop group members and attached with purchased merchandise like albums or CD cases. However, these cards are randomly put in packages so K-pop fans would never know which K-pop members they will get until they unbox the albums. In other circumstances, these special cards are given to K-pop fans as benefits when they attend fan-meeting events or pre-order merchandise.

- K-pop photocards pricing (problems)

Photocards pricing varies based on factors such as their conditions, sellers' locations, group, member popularity, and types of packages or events they were pulled from. They are also affected by the demand and member preferences of fans of a specific country. Japan and South Korea have the most collectors where online markets, such as Bunjang and Mercari, can dictate the pricing of photo cards. In Asia, Twitter is a popular platform for collectors, whereas Instagram is popular in the United States and the United Kingdom. E-commerce and secondhand marketplaces such as Mercari, Bunjang, Carousell, Shopee, eBay, and Xianyu are also popular among fans. One thing in common is that these marketplaces are not centralized. In other words, these economies are selling other product categories including photo cards. Unfortunately, the Vietnam market has not offered any platforms for Vietnamese K-pop fans, and thus, they must reach out to other websites worldwide which makes transactions more difficult and expensive due to overseas shipping prices.

https://www.vice.com/en/article/qjbenx/what-kpop-photocard-why-collect-price-expensive

https://koreajoongangdaily.joins.com/2021/08/10/entertainment/kpop/kpop-albums-kpop-albums-photo-card-Hanteo-Global-KPop-Report/20210810170500503.html

2.

CNN: Convolutional Neural Network (a class in deep learning)

Model accuracy: the ratio of the number of images successfully predicted to the total number of predictions produced by a trained model.

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https://developers.google.com/machine-learning/crash-course/classification/accuracy#:~:text=Informally%2C%20accuracy%20is%20the%20fraction,predictions%20Total%20number%20of%20predictions

https://developers.google.com/machine-learning/crash-course/classification/accuracy#:~:text=Informally%2C%20accuracy%20is%20the%20fraction,predictions%20Total%20number%20of%20predictions

https://www.analyticsvidhya.com/blog/2021/05/convolutional-neural-networks-cnn/

Appendix B: Resources

- Timeline Plan Excel File: [timeline plan (1).xlsx](#) (Sheet 1 is Timeline plan, Sheet 2 is Project schedule, Sheet 3 is Project Team)

- Figma Design: https://www.figma.com/file/9LdKX5MPWy8y1OQln0UqMf/BUILDING-IT-SYS?node-id=0%3A1

- Trello Project Management System: https://trello.com/invite/b/lewZ5bMu/e5c2dd4901ef2aee66508231da4d7315/team-5-bits-kronicle

- General folder for the whole project: https://drive.google.com/drive/folders/1xzs8R-lAeQp9TITxuDxVjMDdCCpHQN5u?usp=sharing