

AI-Powered Campus Secondhand Marketplace

Software Design Document

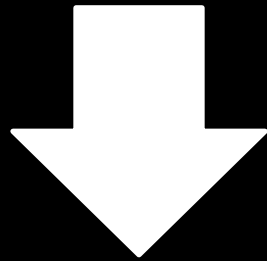
Team 2
(Kitae Kim, Jaeheon Park, Sanghoon Lee)

Brief Summary

| Brief Summary



⚡ 번개장터



Trust & Relevance

1. Auto Categorization & Tags using AI

Select to insert images (up to 10)

Title
Enter item title

Description
Enter description

Price
Enter price (e.g., 40000)

Category (auto, editable)
auto category

Tags (auto, comma separated)
tag1, tag2

Click to post



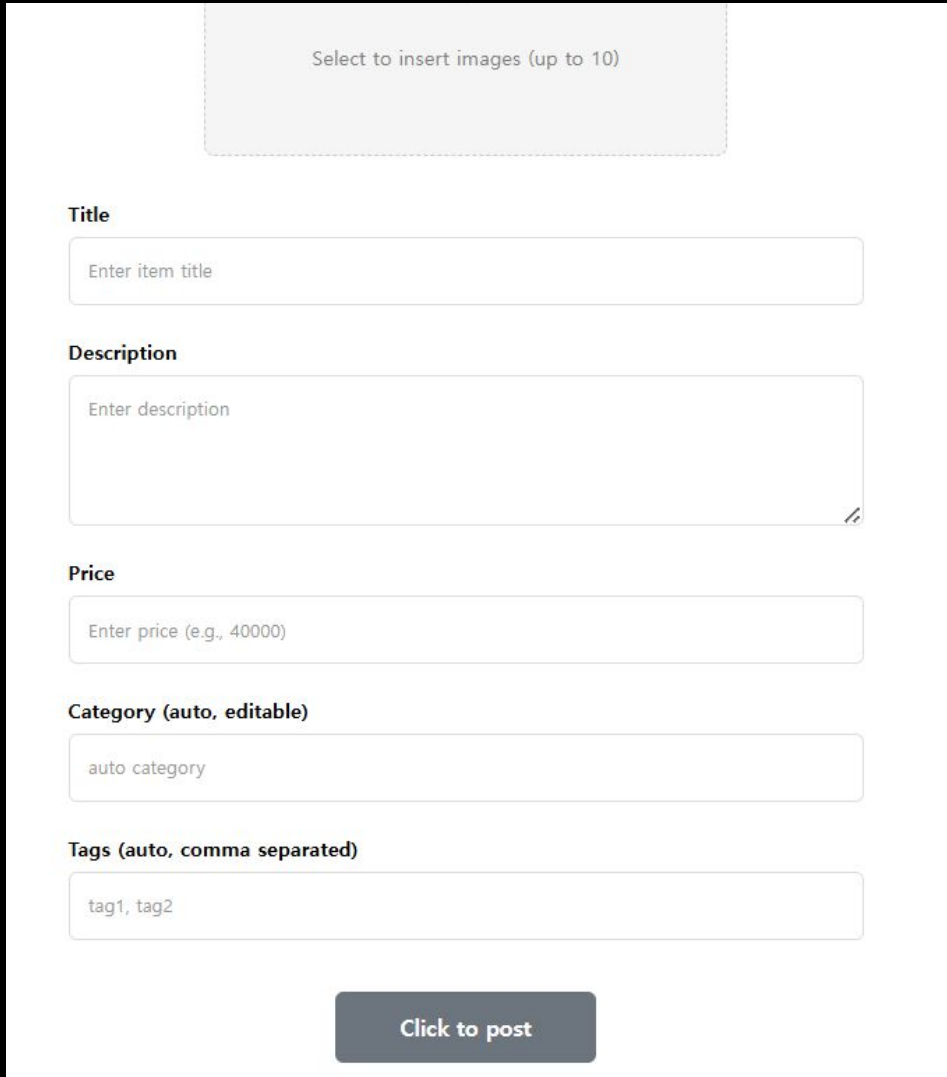
Category (auto, editable)

electronics

Tags (auto, comma separated)

electronicdevice, laptop, personalcomputer, computer, officeequipment

2. AI Recommendation System



Select to insert images (up to 10)

Title
Enter item title

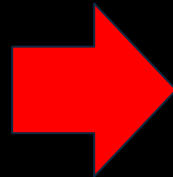
Description
Enter description

Price
Enter price (e.g., 40000)

Category (auto, editable)
auto category

Tags (auto, comma separated)
tag1, tag2

Click to post



Title + Description + Tag

→ Vectorize (Open AI)

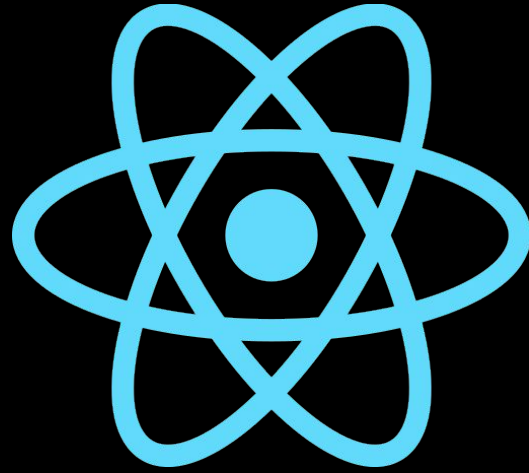
1. Embedding Vector
2. Cosine Similarity
3. Find similar products

Architectural Design

| FrontEnd



ES6+



19.2.0

react-router-dom
(7.9.4)



Bootstrap Icons
(1.13.1)

5.3.8

| BackEnd



Backend-as-a-Service

supabase

Edge Functions

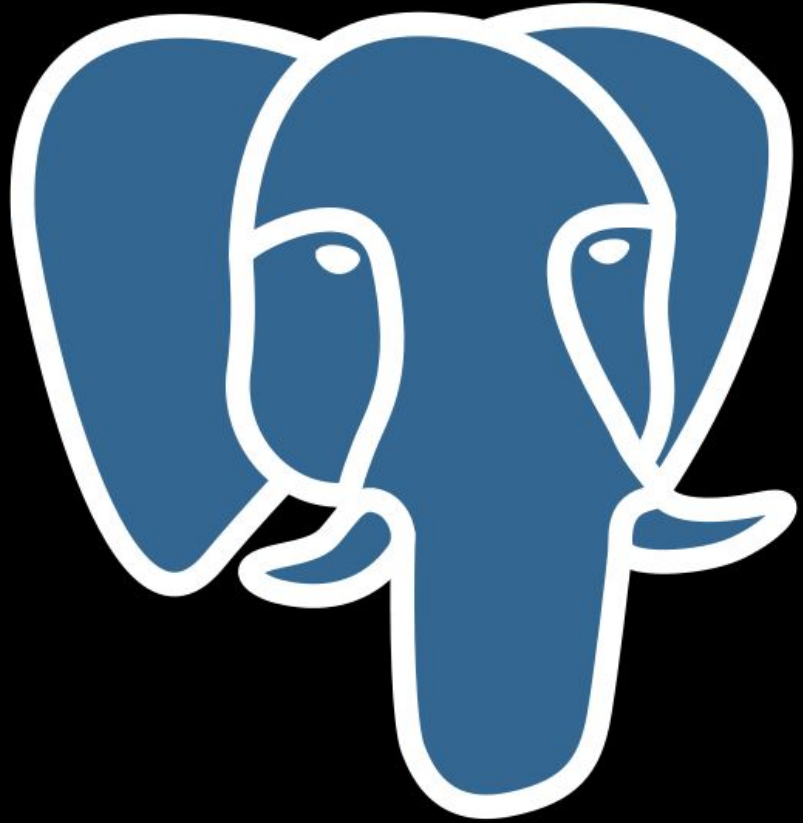
Supabase Auth

Supabase Storage

Supabase Functions

Supabase Realtime

| Database Layer



PostgreSQL 15

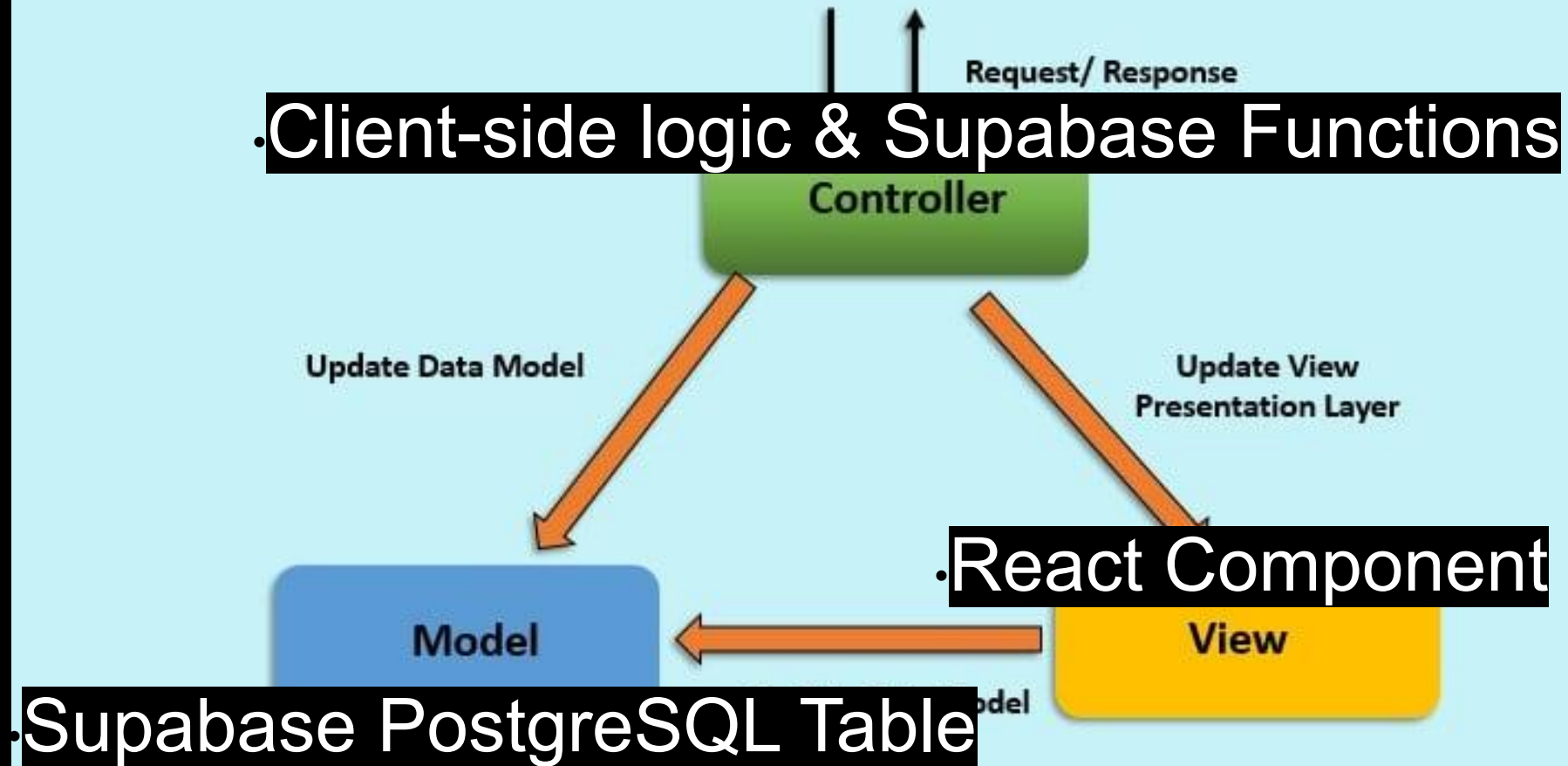
ORM-like Interface

ACID Compliance

Compatibility with JSON field

Model-View-Controller (MVC)

What is MVC Design Pattern



Data & API Design

Sequence Diagram

Schedule

| FrontEnd

Milestone

Task

First

Implement **Community Page UI** with navigation and post structure

Second

Develop **Marketplace UI** (item list, detail view, filter/sort)

Third

Complete **Profile UI** and **Chat UI**, integrate Supabase Auth state

Last

UI refinement, mobile responsiveness, final testing

| BackEnd

Milestone

Task

First

Implement **core Supabase API connections** for posts, users, and items

Second

Extend **API endpoints** and integrate **AI model connections** for automated tagging

Third

Add **Google OAuth** and multi-auth (email, Google) with Supabase

Last

Finalize API, enable monitoring/logging, connect production Supabase

| AI

Milestone

Task

First

Prototype **automated category & tag generation I**
(rule-based + keyword extraction)

Second

Implement **similar-item recommendation system** using
embedding similarity

Third

Improve **recommendation accuracy** and refine tagging
pipeline

Last

Integrate final **AI tagging + recommendation** into live
app

Thank you for listening

Q/A