



Engineering
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School of Computing
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School of Computing & Information Sciences

Fall 2025 Senior Design Project

Tailored Tails

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Problem

Families and individuals looking for adoptable dogs must sift through hundreds of candidates to find the right fit. Many shelter websites offer only basic filters, which often lead to mismatches, failed adoptions, and longer shelter stays. There is a need for a smarter matching system that connects adopters with dogs based on compatibility—not guesses.

Current System

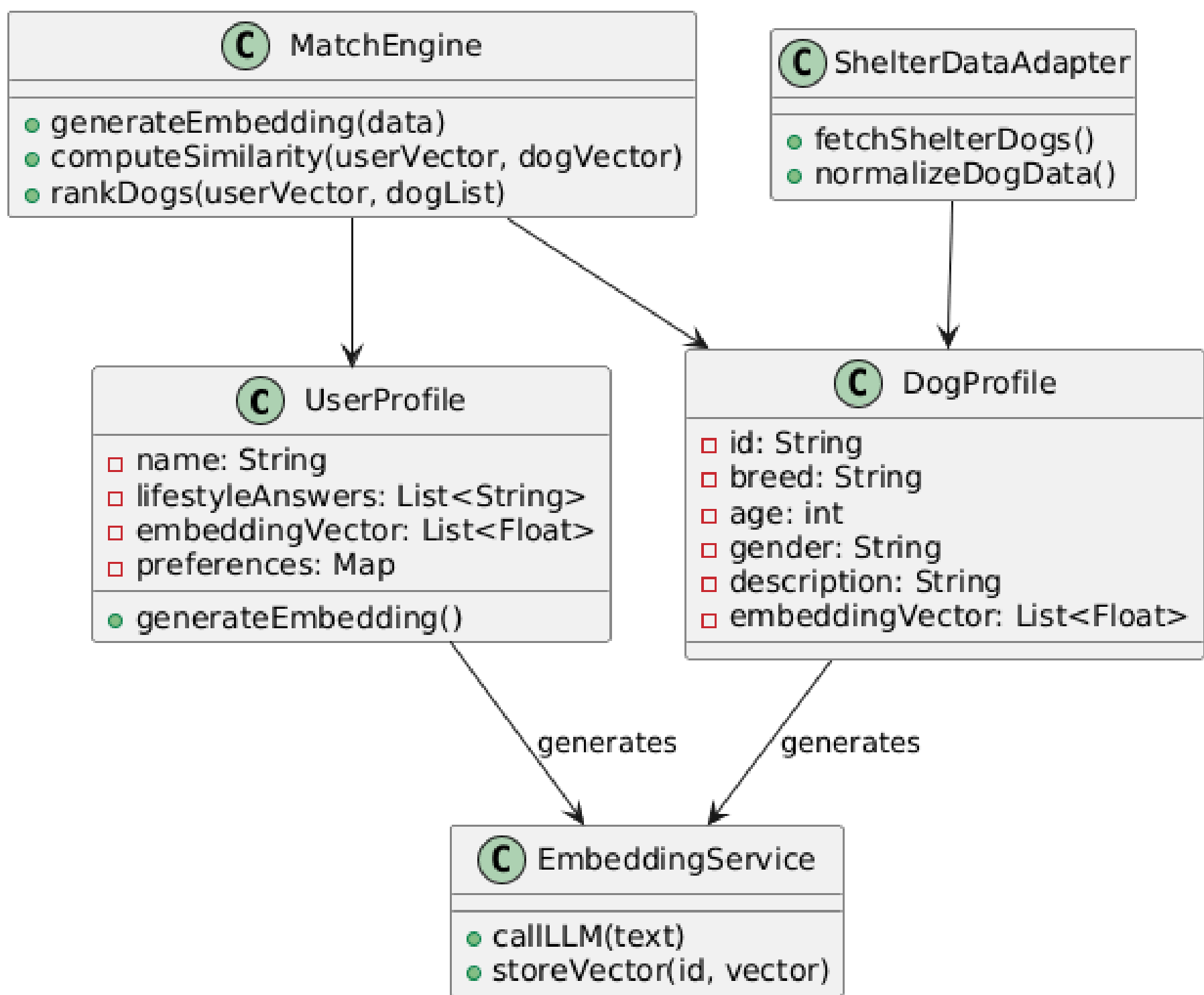
Currently, adopters browse their local animal services website using simple filters such as age, breed, and gender. There is no intelligent mechanism for comparing an adopter’s lifestyle to a dog’s traits, resulting in a “scroll-and-hope” experience rather than an evidence-based match. Tailored Tails improves this by using LLM-generated embeddings to represent both adopter lifestyle and dog profiles, enabling similarity-based ranking that highlights the most compatible dogs first.

Requirements

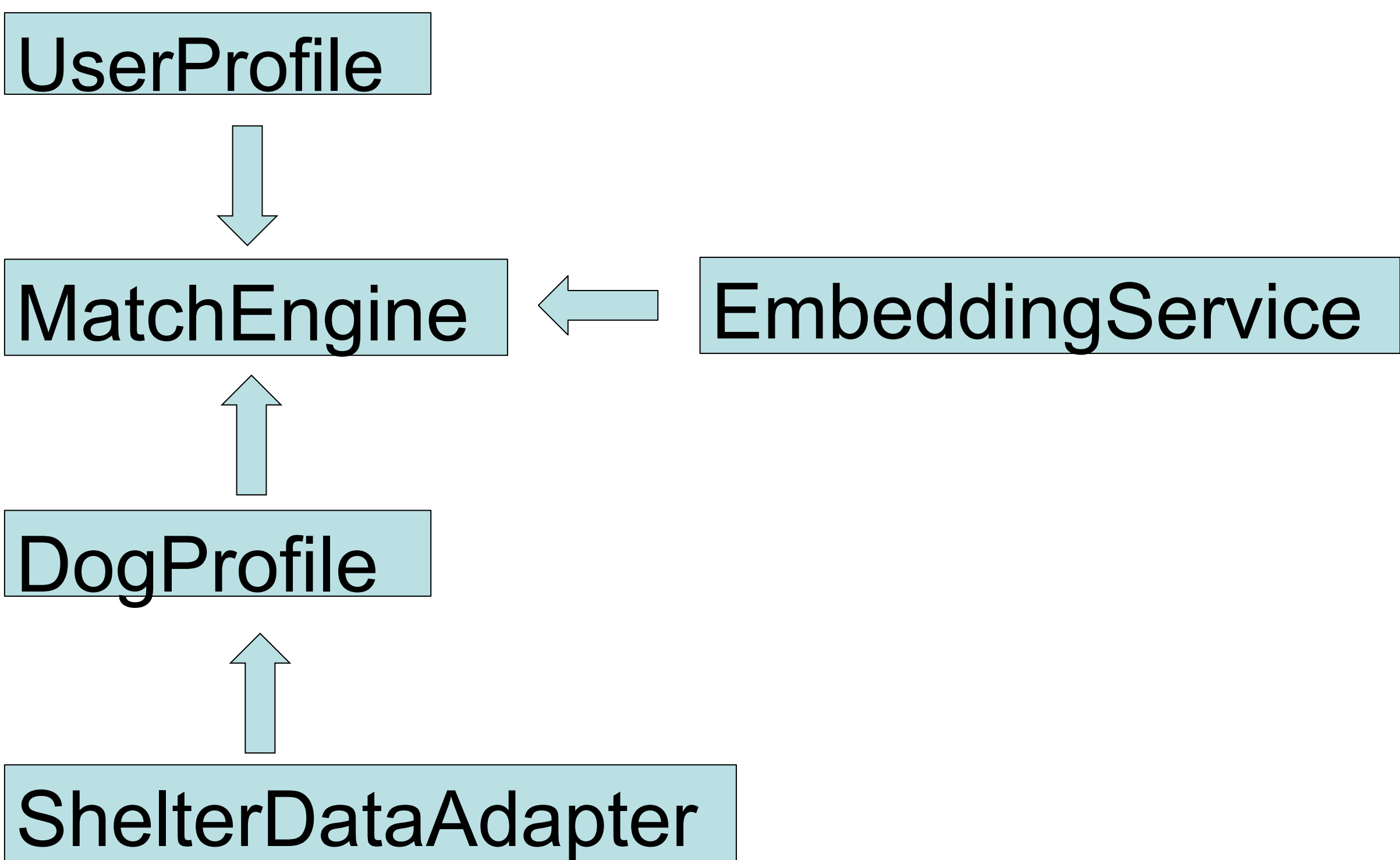
Functional Requirements: Collect adopter lifestyle inputs and shelter dog profiles. Convert user and dog data into embeddings using an LLM. Compute similarity scores to rank dog matches. Display recommendations through a clean user interface. Support user login via Firebase Authentication.

Non-Functional Requirements: Fast and accurate compatibility scoring. Secure data storage following Firebase rules. Responsive UI built with Next.js + Tailwind CSS. Scalable design supporting multiple shelters.

System Design



Object Design



Implementation

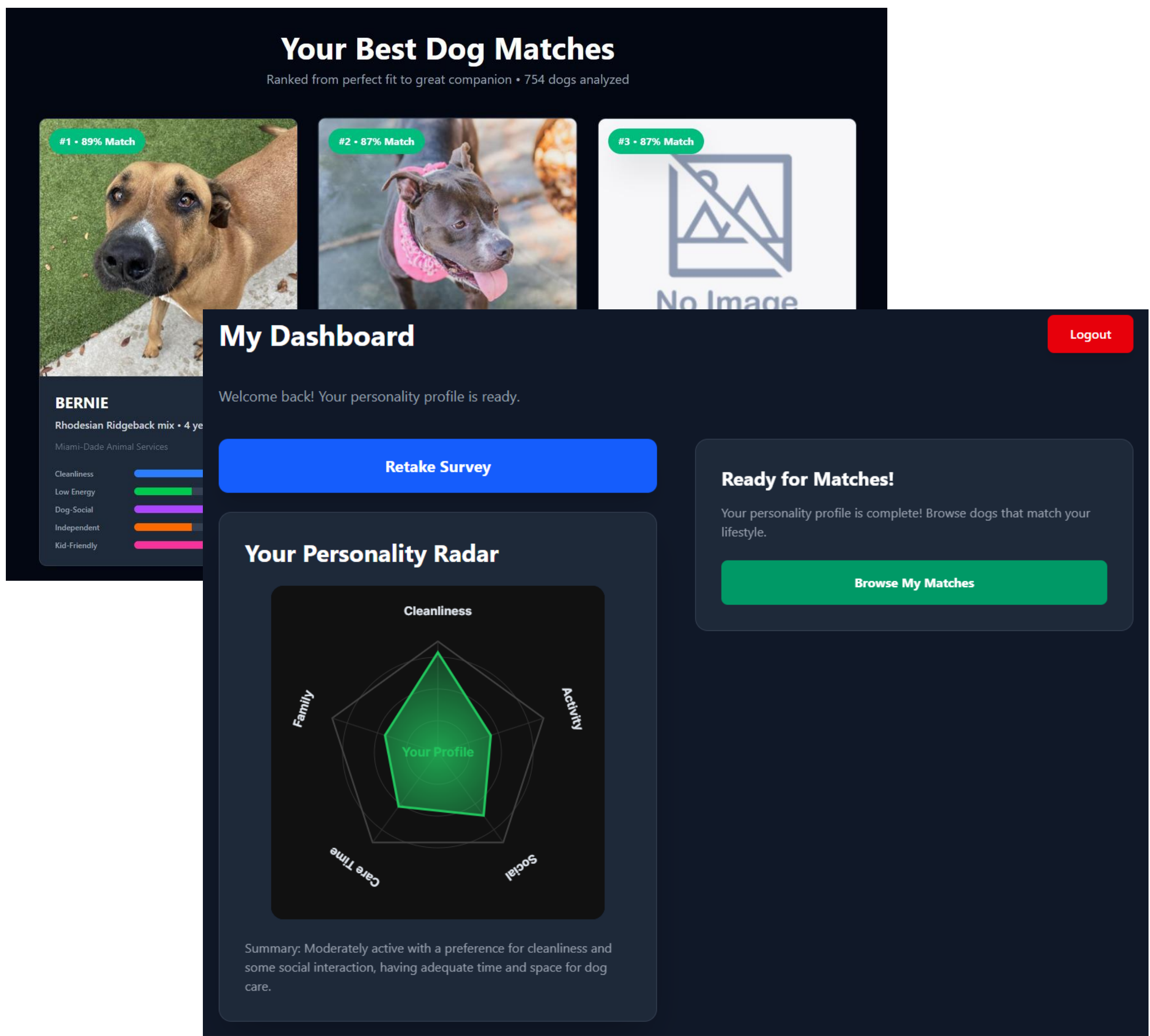
Collect surface-level lifestyle information from user. Then use artificial intelligence to turn that information into an embedding. Then get all the dogs in nearby shelters and create embeddings based on breed, age, gender, and description. Sort dogs based on embedding similarity to user since closer embeddings mean higher compatibility.

Verification

Testing Methods:

- **Unit Tests:** Validated embedding formatting, scoring logic, and data cleaning functions
- **Integration Tests:** Confirmed the matching pipeline works end-to-end
- **Manual Validation:** Realistic user scenarios tested to confirm match quality
- **Cross-shelter Checks:** Ensured dogs from different shelters remain comparable after data normalization
- **Front-End Walkthrough:** Verified UI flow from landing → questionnaire → results

Screenshots



Summary

TailoredTails uses LLM embeddings to match adopters with compatible dogs based on lifestyle and preferences. By comparing user and dog vectors, the system provides ranked suggestions that improve adoption success.

Acknowledgement

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