University of Information Technology

2024-2025 Academic Year

CST-5105: Artificial Intelligence

Fashionista

Submitted by

Group-4

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Members

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Roles and responsibilities

Shun Lai Oo	Analysis + Knowledge base
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Hnin Shwe Yi Wint	User interface+ Knowledge base
Myat Shwe Yi Moe	Personalize + Knowledge base
Kyi Sin Shun Lett	Analysis +Knowledge base

Contents

Introduction

- In the modern era of technology, artificial intelligence (AI) has revolutionized various fields, including fashion.
- The "Fashionista" project harnesses the power of AI to transform how individuals select and coordinate their outfits.
- This project integrates Prolog, a logic programming language, with PHP, a server-side scripting language, to deliver a sophisticated fashion advisory system.

Objective

- To provide personalized outfit recommendations
- To provide convenience
- To make fashion accessible, fun, and stress-free
- To cater to a diverse range of body types, skin tones, and style preferences, promoting inclusivity in fashion.

Requirements

Hardware Requirement - 64-bit operating system, x64-based processor

Software Requirement - Visual Studio (window 11), SWI-Prolog, XAMPP

Algorithm and techniques

Heuristic Evaluation:

- By sorting items based on match count, applying a heuristic approach to prioritize items with the highest number of matches. In AI, heuristics are used to make decisions or rank options based on certain criteria.

```
% Helper rule to sort matches by count (highest to lowest)
sort_matches_by_count(Matches, SortedMatches) :-
   sort(2, @>=, Matches, SortedMatches).  % Sort by the second element (MatchCount) in descending order

% Helper rule to remove duplicates based on item
remove_duplicates(List, UniqueList) :-
   sort(1, @<, List, UniqueList).  % Sort by the first element (Item) to remove duplicates
```

Algorithm and techniques

a snippet of our knowledge base in prolog

```
clothing('Pleated Skirt', 'Elegant', 'Adult', 'Pear', 'Heart', '#ae703a', 'Female', 'Bottom', 'image/pleated_skirt.png').
clothing('Silk Blouse', 'Elegant', 'Adult', 'Rectangle', 'Heart', '#e9b885', 'Female', 'Top', 'image/silk_blouse.jpg').
clothing('Maxi Skirt', 'Elegant', 'Adult', 'Hourglass', 'Round', '#ad6c44', 'Female', 'Bottom', 'image/maxi_skirt.png').
clothing('Casual Slim Fit Pants', 'Casual', 'Adult', 'Pear', 'Square', '#ae703a', 'Male', 'Bottom', 'image/casual_slim_fit_pants.png').
clothing('Casual Jogging Set', 'Casual', 'Adult', 'Inverted Triangle', 'Heart', '#ad6c44', 'Male', 'Set',
'image/casual_jogging_set.png').
clothing('Casual T-Shirt', 'Casual', 'Adult', 'Rectangle', 'Oval', '#f5c1a2', 'Male', 'Top', 'image/casual_tshirt.png').
clothing('Bohemian Blouse', 'Casual', 'Adult', 'Pear', 'Oval', '#30150e', 'Female', 'Top', 'image/bohemian_blouse.jpg').
clothing('Patterned Scarf', 'Casual', 'Adult', 'Pear', 'Oval', '#30150e', 'Female', 'Top', 'image/patterned_scarf.png').
clothing('Bohemian Blouse', 'Casual', 'Adult', 'Pear', 'Oval', '#30150e', 'Female', 'Top', 'image/bohemian_blouse.jpg').
clothing('Patterned Scarf', 'Casual', 'Adult', 'Pear', 'Oval', '#30150e', 'Female', 'Top', 'image/patterned_scarf.png').
clothing('Cute Casual Shorts', 'Cute', 'Teenager', 'Oval', 'Heart', '#dfb175', 'Male', 'Bottom', 'image/cute_casual_shorts.png').
clothing('Cute Denim Jeans', 'Cute', 'Teenager', 'Heart', 'Diamond', '#ae703a', 'Male', 'Bottom', 'image/cute_denim_jeans.png').
clothing('Cute Cargo Pants', 'Cute', 'Teenager', 'Square', 'Round', '#ad6c44', 'Male', 'Bottom', 'image/cute_cargo_pants.png').
```

Algorithm and techniques

a snippet of our knowledge base in prolog

```
suitable_color('#dfb175', 'Warm shades such as coral, orange, and earth tones').
suitable_color('#ae703a', 'Rich colors like olive green, brown, and mustard yellow').
suitable_color('#ad6c44', 'Deep hues such as burgundy, navy blue, and dark green').
unsuitable_color('#dfb175', '#30150e').
unsuitable_color('#ae703a', '#e9b885').
unsuitable_color('#ae703a', '#ad6c44').

haircut_recommendation(male, oval, 'Pompadour').
haircut_recommendation(male, oval, 'Quiff').
haircut_recommendation(male, square, 'Buzz Cut').
haircut_recommendation(male, square, 'Undercut').
haircut_recommendation(female, round, 'Bob Cut').
```

Algorithm and techniques

a snippet of our knowledge base in prolog

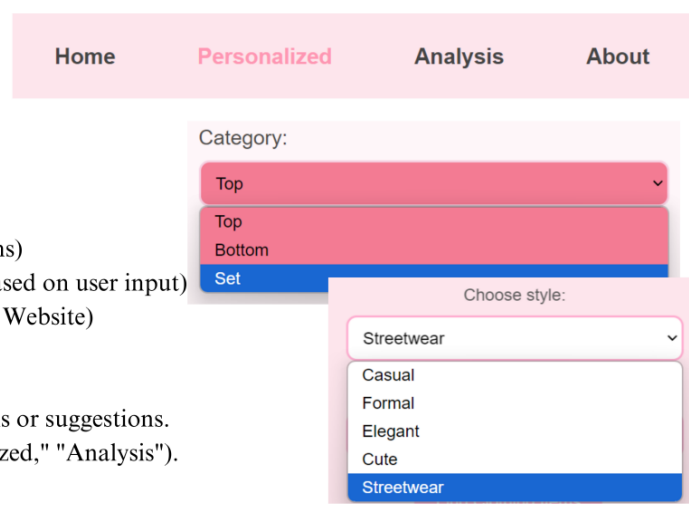
```
find_items_by_gender_and_body_type(Gender, BodyType, Items) :-findall(Item,
clothing(Item, _, _, BodyType, _, _, Gender, _, _), Items).

clothing_items_for_body_type(BodyType, Items) :-
findall(Item, clothing(Item, _, _, BodyType, _, _, _, _, _), Items).

recommend_clothing(Style, AgeGroup, BodyType, FaceShape, SkinTone, Gender, Category, Item, ImagePath) :-
clothing(Item, Style, AgeGroup, BodyType, FaceShape, SkinTone, Gender, Category, ImagePath),
format('Item(~w, ~w).~n', [Item, ImagePath]).

count_matches([], [], 0).
count_matches([X|T1], [X|T2], N) :-
    count_matches(T1, T2, N1),
    N is N1 + 1.
count_matches([_|T1], [_|T2], N) :-
    count_matches(T1, T2, N).

suitable_colors_for_skin_tone(SkinTone, SuitableColors) :-
    findall(ColorDesc, suitable_color(SkinTone, ColorDesc), SuitableColors).
```

Algorithm and techniques

a snippet of our knowledge base in prolog

```
recommend_clothing_min1(Style, AgeGroup, BodyType, FaceShape, SkinTone, Gender, Category) :-
   % Filter clothing items based on selected Gender and Category
   findall([Item, ImagePath, MatchCount],
         (clothing(Item, StyleDB, AgeGroupDB, BodyTypeDB, FaceShapeDB, SkinToneDB, GenderDB, CategoryDB,
ImagePath),
          StyleDB = Style,         % Match the Style exactly
          AgeGroupDB = AgeGroup,    % Match the AgeGroup exactly
          CategoryDB = Category,    % Match the Category exactly
          (Gender = 'Other' ; GenderDB = Gender),  % Match Gender if not 'Other'
          count_matches([BodyType, FaceShape, SkinTone, Gender, Category],
                  [BodyTypeDB, FaceShapeDB, SkinToneDB, GenderDB, CategoryDB],
                  MatchCount),
          MatchCount >= 1),  % At least 1 feature matches (excluding Style and AgeGroup)
         Matches),
   remove_duplicates(Matches, UniqueMatches),  % Remove duplicate items
   sort_matches_by_count(UniqueMatches, SortedMatches),  % Sort by match count
   display_sorted_matches(SortedMatches).  % Display the sorted matches
```

System Design



1. Frontend Components (UI/UX)

Home Page:

Navigation Bar: Contains links for:

- Home
- Personalized (Fashion recommendations)
- Analysis (Results of fashion analysis based on user input)
- About (Information about Fashionista Website)

Interactive Elements:

- Dropdown menus for selecting options
- Image sliders for showing clothing items or suggestions.
- Buttons for navigation (e.g., "Personalized," "Analysis").

System Flow Diagram

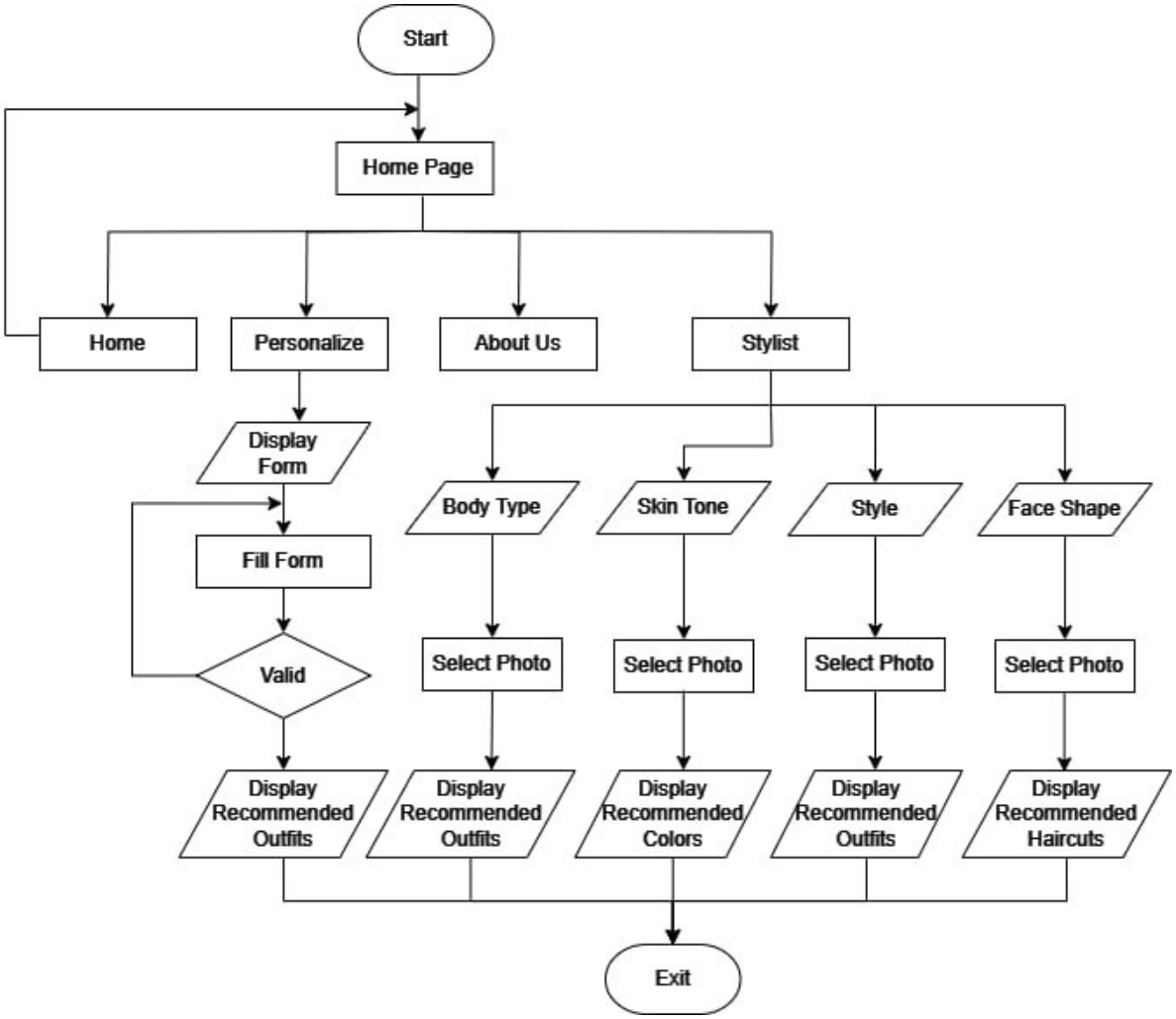


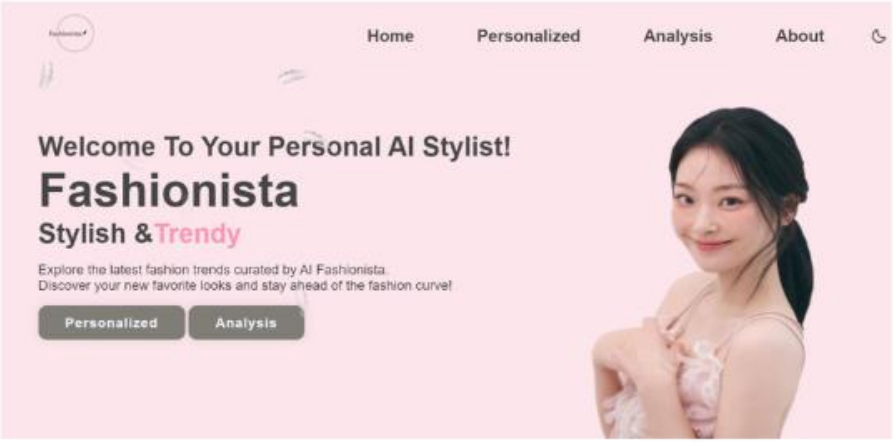
Figure 1:System Flow Diagram

Current Limitation

- Limited clothing knowledgebase size reduces recommendation variety.
- Simplified body type classifications may not reflect all user shapes.
- Skin tone options are restricted, limiting tailored recommendations.
- Gender categorization is binary, excluding non-binary preferences.
- Style recommendations are basic and may not fully capture user tastes.
- No real-time updates on fashion trends or new collections.
- Lack of interactive user feedback prevents personalized improvements.

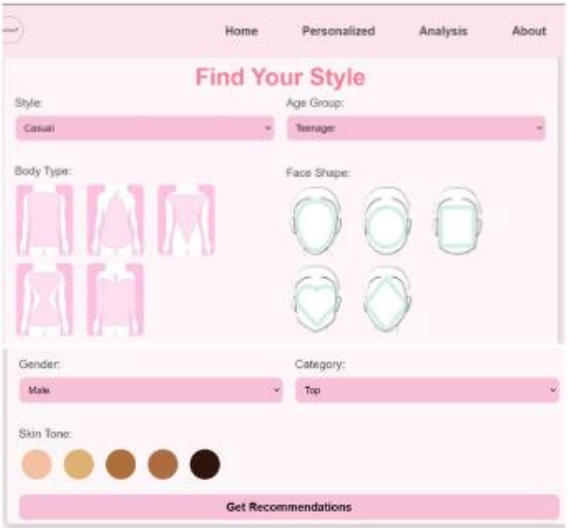
System Implementation

Home page



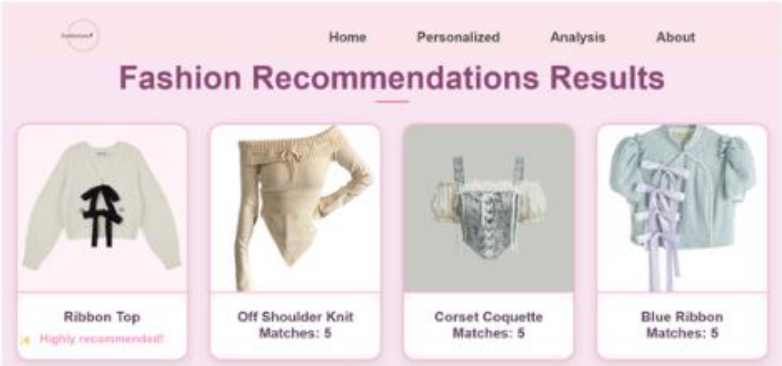
System Implementation

personalized form



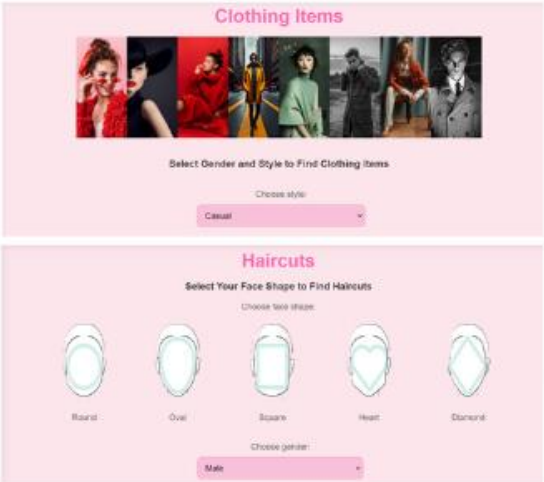
System Implementation

personalized form result



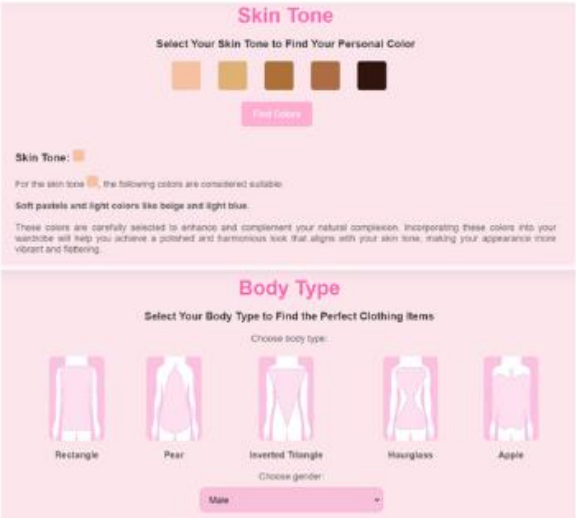
System Implementation

analysis form



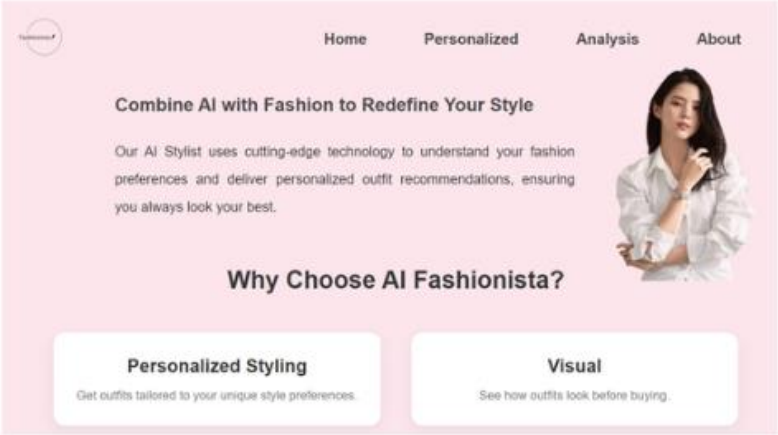
System Implementation

analysis form



System Implementation

About us



Further Extension

- **Enhanced User Profiles:** Incorporating more detailed user profiles with preferences, body measurements, and style history to generate even more precise recommendations.
- **Machine Learning Integration:** Leveraging machine learning to analyze fashion trends and user feedback, improving the system's ability to suggest new and evolving styles.
- **Image Recognition:** Implementing image recognition to allow users to upload photos of their wardrobe items and receive mix-and-match suggestions.

Conclusion

- Prolog and PHP Integration: The project leverages Prolog for developing a knowledge base of fashion rules and utilizes PHP to build a user-friendly web interface, facilitating seamless user interactions.

- Personalized Recommendations: By inputting individual preferences and attributes, users receive tailored fashion advice, enhancing their personal style choices.

- Innovative Use of AI: "Fashionista" showcases the application of artificial intelligence in fashion, setting a precedent for future technological advancements in the industry.

Reference

https://www.w3schools.com/

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https://cliopatria.swi-prolog.org/tutorial/