**Software Engineering FYP-24-SE-A-04 Proposal: AI-Powered Product Recognition and Price and Reviews Comparison from Images**

**Project Title:**

**Instant Product Recognition and Price and Reviews Comparison from Images**

**Problem Statement:**

With the rise of online shopping, users frequently come across products they wish to purchase but often find it time-consuming to search for these products across various platforms to compare prices, specifications, and reviews. While some visual search tools exist, they tend to lack features that facilitate identifying products, comparing specifications, or finding the best deals across multiple platforms. Users still need to manually search, browse, and compare product options, which can be inefficient and tedious.

**Key Observations and Gaps**:

* Current tools like **Google Lens** lack multi-marketplace price comparisons and shopping-centric features.
* **ProductSearch.app** has limited AI capabilities and lacks multifunctionality beyond image-based product searches.
* **Search Products by Image** provides browser extension convenience but is restricted to a few marketplaces and lacks mobile integration.

**The challenge we aim to address:**

To simplify the process of recognizing and comparing products by allowing users to instantly search for and compare prices, specifications, and reviews with just one tap. Users should be able to capture a product from a photo, or a screenshot and quickly obtain product matches, detailed specifications, and links to purchase options across multiple marketplaces.

**Proposed Solution:**

We propose to develop an **AI-powered mobile app** and **browser extension** that can recognize products from an image, or screenshot and provide the user with links to relevant products available online. The system will also perform **price, specification, and review comparisons** across various online platforms, enabling users to make informed purchasing decisions quickly and effortlessly.

**Key Features Include:**

* **Mobile App Functionality**:
  + The app will scan the screen in the background and instantly search for matching products across multiple platforms like **Amazon, AliExpress, Daraz, eBay, and Walmart**, providing results that include **price comparisons, specifications, and reviews**.
  + Additionally, real-time object recognition will be enhanced using **advanced AI capabilities** similar to **Google Lens**, but focusing on **multi-platform price and review comparisons**.
* **Browser Extension Functionality**:
  + On the web, users can crop a specific part of a webpage or video to initiate a search. This extension will return similar products and reviews across **multiple marketplaces**, including smaller or niche platforms not covered by existing tools like **Search Products by Image**.

**Technologies to Be Used:**

1. **AI and Deep Learning**:
   * **Convolutional Neural Networks (CNNs):** Leveraging CNNs for accurate and fast image-based product recognition. Similar models are used by platforms like Google Lens for object detection and identification.
2. **API Integration for Image-Based Product Search**:
   * **Google Cloud Vision API**: For advanced image recognition and object detection, enabling product search based on images with high accuracy.
   * **eBay Image Search API**: Provides the ability to search eBay listings using images, returning relevant product matches with price information.
   * **Alibaba Cloud Image Search API**: Enables image-based product search across large e-commerce catalogs, facilitating the discovery of products similar to the image provided.
   * **Bing Visual Search API**: Allows users to perform visual searches for products and retrieve detailed information, including pricing from various platforms.
   * **Amazon Rekognition**: While not directly tied to Amazon’s e-commerce platform for product search, it provides image analysis tools that can be integrated for custom product recognition systems.
   * **Syte Visual Search API**: Focuses on visual search for fashion and home decor products, allowing customers to search using images and returning visually similar product options.
   * **ViSenze API**: A visual search engine that powers product recognition and retrieval, offering detailed price and product data from multiple marketplaces.
3. **E-commerce Marketplace Integration**:
   * Seamless connection to multiple e-commerce platforms such as Amazon, eBay, AliExpress, Walmart, and Daraz, for real-time product data fetching, price comparisons, and review aggregation.

**Expected Outcome:**

By the end of this project, we will have developed a fully functional **mobile app** and **browser extension** capable of recognizing products from images or screenshots and providing users with detailed comparisons of prices, specifications, and reviews from **multiple e-commerce platforms**.

**Conclusion:**

This project will demonstrate how **AI and deep learning** can be used to enhance the shopping experience by transforming product search and comparison. Users will benefit from the convenience of instant price, specification, and review comparisons with just one tap or a simple crop of an image, significantly improving the **product search efficiency**.

**Recent Work Done in This Field**

**1. Search Products by Image Extension**  
[Link to Platform](https://chromewebstore.google.com/detail/search-products-by-image/dbkadabdmgodalaffilghahgjcicgigf?hl=en&pli=1)  
This browser extension allows users to find products on platforms like AliExpress, eBay, and Amazon by right-clicking on an image. While it is simple to use, it lacks a mobile application and focuses on a limited range of marketplaces.

**2. ProductSearch.app**  
[Link to Platform](https://productsearch.app/)  
Productsearch.app allows users to upload or select images to search for visually similar products across multiple marketplaces like eBay, Amazon, AliExpress, Alibaba, and Walmart. However, it lacks advanced AI capabilities like real-world object identification or multifunctionality.

**3. Google Lens**  
[Link to Platform](https://lens.google/#shopping)  
Google Lens uses AI to identify objects, including products, and provides links to purchase them. While its image recognition is powerful, its focus is not solely on price comparison or multi-market analysis, unlike the other platforms.