Indian Institute of Technology Kanpur

Intellectual Property Disclosure Form (Filled)

Title of the invention: AI-Vastra — A Multimodal AI Assistant for E-Commerce Trust and Fit

Inventors:

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Abstract (100 words):

AI-Vastra is an AI-driven web prototype that integrates speech, language, and vision technologies to enhance trust, accessibility, and product fit visualization in e-commerce. It enables users to interact through voice or text, receive AI-based product summaries, and visualize fit or scale via Virtual Try-On (VTO) and AR Size Visualizer modules. This multimodal system aims to empower low-literacy and multilingual shoppers, reducing perceived risk and cognitive barriers in online shopping.

Non-confidential description of the invention (Layman's terms):

The invention focuses on creating a multimodal AI assistant that combines natural language understanding, speech interfaces, and computer vision visualization to improve e-commerce trust and inclusivity. The system integrates APIs such as Azure Cognitive Services (speech-to-text and text-to-speech), Gemini or Perplexity (for review summarization), and ClipDrop (for scale visualization). Users can converse with the assistant in multiple languages and visually verify product fit or size, reducing uncertainty in online purchases.

Use Case:

AI-Vastra serves e-commerce users—particularly new, low-literacy, or multilingual shoppers—who face difficulty trusting product information online. The system's multimodal interface allows spoken questions, provides verified summaries, and visualizes apparel fit or object size. It can be used by retail companies, accessibility designers, and AI-integrated customer support systems.

Keywords: Multimodal AI, E-commerce, Accessibility, Virtual Try-On, AR Visualization, Speech Interface, Trust Design

Novelty and Inventive Step:

Unlike existing e-commerce assistants that rely solely on text or visual interfaces, AI-Vastra combines speech, language, and vision modalities into a single, unified interaction model. The inventive step lies in integrating multiple AI APIs to address trust and accessibility as design challenges, not just technical ones. It introduces static verification cues, bilingual speech interaction, and modular visualization tools within one framework.

Advantages over comparable inventions:

The AI-Vastra system improves accessibility for non-English-speaking users, enhances product trust through verified summaries, and reduces returns by offering visual try-ons and size visualization. It uses existing APIs in an optimized, energy-efficient manner, enabling quick deployment and scalability. Compared to other assistants, it uniquely blends multimodal inputs with real-time, ethical AI responses.

Technology Readiness Level (TRL): TRL-4 — Design and Development stage; prototype demonstrated and tested.

Need and Demand:

The invention addresses accessibility and trust gaps in the Indian e-commerce market, where many first-time online shoppers face language barriers and uncertainty in product fit. AI-Vastra provides inclusive, speech-based access to product information and visualization, promoting confident digital participation.

Market Access Information & Commercial Potential:

India’s e-commerce market is expected to reach USD 350 billion by 2030, with a growing segment of non-English-speaking users. AI-Vastra has commercial potential for integration into platforms like Meesho, Flipkart, or government-backed rural digital commerce initiatives. Adoption would improve customer retention and reduce return rates.

Revenue Sharing: All five inventors share equal contribution (20% each).

Patent Filing Type: National (India)

Department: IIT Kanpur
Course: DES646 – AI for Designers

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