Chapter XXI
Interactive Personalized Catalogue for M-Commerce

Sheng-Uei Guan
Brunel University, UK

Yuan Sherng Tay
University of Singapore, Singapore

INTRODUCTION

M-commerce possesses two distinctive character-istics that distinguish it from traditional e-commerce: the mobile setting and the small form factor of mobile devices. Of these, the size of a mobile device will remain largely unchanged due to the tradeoff between size and portability. Small screen size and limited input capabilities pose a great challenge for developers to conceptualize user interfaces that have good usability while working within the size constraints of the device.

In response to the limited screen size of mobile devices, there has been unspoken consensus that certain tools must be made available to aid users in coping with the relatively large volume of information. Recommender systems have been proposed to narrow down choices before present-ing them to the user (Feldman, 2000).

We propose a product catalogue where brows-ing is directed by an integrated recommender system. The recommender system is to take incremental feedback in return for browsing assistance. Product appearance in the catalogue will be dynamically determined at runtime based on user preference detected by the recommender system. The design of our hybrid m-commerce catalogue recommender system investigated the typical constraints of m-commerce applications to conceptualize a suitable catalogue interface. The scope was restricted to the case of having personal digital assistant (PDA) as the mobile de-vice. Thereafter, a preference detection technique was developed to serve as the recommender layer of the system.

BACKGROUND

In a study conducted by Bryan & Gershman (1999), a new user behavior termed opportunis-tic exploration has been identified, where users have multiple, ill-defined overlapping interests. Throughout the course of browsing, exposure to items affect interests, and interest may evolve due to exposure or whim. In Tateson & Bonsma (2003) the emphasis was that the paradigm of online shopping is fundamentally different from that of information retrieval.

Despite the importance of having a well-designed online catalogue that supports the shopping behavior of users, the challenge of including such browsing capabilities in m-commerce is great, given that small screen size of mobile devices severely limits the number of products that may be presented on-screen.

The predominant strategy of organizing products into narrow categories has many problems (Lee, Lee & Wang, 2004). The alternative solution of interactive catalogues (Tateson & Bonsma, 2003) allows for fluid navigation in the product space, whereby users are given the freedom to shape up the browsing process and redirect it when their interests change.

Instead of having the user browse painstakingly through the product catalogue of a retailer, a recommender system could be used as a subsystem of the interactive catalogue to narrow down the choices before presenting them to the user. Recommender systems perform the role of sales agents by first understanding a user's preferences through querying and profiling, and subsequently presenting information or products of relevance to the user (Schafer Konstan & Riedl, 2001). Recommender systems have long been regarded as a highly desirable feature of e-commerce.

Currently there are numerous ongoing studies to improve recommender technology in the context of e-commerce (Montaner, Lopez & Lluis, 2003). However, the approaches of such studies are seldom directly applicable to the domain of m-commerce. With respects to the m-commerce constraints, a "best effort" recommender system that make do with whatever information available will serve as an interesting alternative to the "best quality" emphasis of current recommendation technology. A preference detection technique was developed to serve as the recommender layer of the proposed system.

DESCRIPTION OF INTERACTIVE CATALOGUE

The interface of a catalogue is divided into three components: visual presentation, browsing process, and feedback mechanism

Figure 1. Screenshot
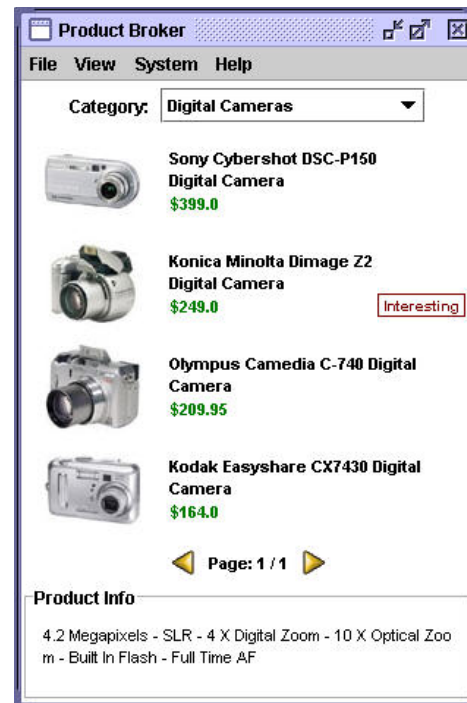
Presentation

Given the constraint of a PDA screen, the main concern of our design is to maximize emphasis on product presentation while simplifying the control elements. Human cognition is more adapted to the processing of visual images as compared to textual information (Lee et al., 2004). Visual elements are thus useful mechanisms to improve the usability of a catalogue. To save space while facilitating easy examination of products, we incorporate a product information panel. Figure 1 shows a screenshot of the implemented user interface.

Browsing Process

Browsing naturally induces a sense of flow, which may be imagined as a navigation process through the product space. The main challenge in the design of such a navigation system is to define the relation of products with respect to one another. Differing viewpoints of people dictate that each individual sees the product relations from a different perspective. One method of custom defining product relations doing so is through interactive

9 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage: www.igi-global.com/chapter/interactive-personalized-catalogue-commerce/21248

Related Content

The Challenge of Teaching Information Technology in Public Administration Graduate Programs
Alana Northrop (1999). *Information Technology and Computer Applications in Public Administration: Issues and Trends (pp. 1-22).*
www.irma-international.org/chapter/challenge-teaching-information-technology-public/74595

Determining Types of Services and Targeted Users of Emerging E-Government Strategies: The Case of Tanzania
Janet Kaaya (2009). *International Journal of Electronic Government Research (pp. 16-36).*
www.irma-international.org/article/determining-types-services-targeted-users/2069

Social Equity, the Digital Divide and E-Governance: An Analysis of E-Governance Initiatives in India
Meena Chary (2012). *Digital Democracy: Concepts, Methodologies, Tools, and Applications (pp. 1675-1688).*
www.irma-international.org/chapter/social-equity-digital-divide-governance/67680

Broadband Adoption and Usage Behavior of Malaysian Accountants
Yogesh K. Dwivedi, Mohamad Hisyam Selamatand Banita Lal (2011). *International Journal of Electronic Government Research (pp. 1-14).*
www.irma-international.org/article/broadband-adoption-usage-behavior-malaysian/53482

Evidence of an Open Government Data Portal Impact on the Public Sphere
Rui Pedro Lourenço (2016). *International Journal of Electronic Government Research (pp. 21-36).*
www.irma-international.org/article/evidence-of-an-open-government-data-portal-impact-on-the-public-sphere/167747