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**A Personalized Cross-Domain Recommendation System
To Address The Continuous Cold-Start Problem**

**A Dissertation By
Moiz Mansoor Ali (2015033 | W1582998)**

**Supervised By
Mr. Guhanathan Poravi**

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Abstract

Recommendation systems are a major asset to online shopping and e-commerce applications, however when these applications obtain a new user, their recommendation systems are unable to recommend items that are personalized to the new user's taste due to the lack of user interaction information. This issue is known as the cold-start problem and could make an e-commerce application lose a lot of selling opportunity if not addressed. Furthermore, it is identified that a recommendation system can be inaccurate even if sufficient user data is available, as the data could be old and outdated and the user's interest may have changed over time or the user could be displaying multiple personas at the same time period. This phenomenon is identified as the 'continuous' cold-start problem. To overcome such issues, a personalized cross-domain recommendation system is proposed where the data of a user that is needed to provide item recommendations is obtained from third-party social applications in which the user is actively participating in. The results show that this method can not only avoid the cold-start problem, but also adapt with the changes of a user's taste as time passes, along with providing item recommendations for the different personas that a user inhabits, provided that the user continuously interacts with the third-party social applications in which data is obtained from.

Keywords: Cross-Domain Recommendation, Cold-Start, Natural Language Processing, Sentiment Analysis, Content-Based Filtering