

DEVELOPMENT AND IMPLEMENTATION OF A BEHAVIORAL DATA-DRIVEN CONTENT GENERATION SYSTEM

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Annotation. This research develops an innovative interactive platform that generates personalised advertising content by analysing user behavioral data. The study addresses critical challenges in advertising technology by creating an integrated system that bridges the gap between data collection and effective personalisation implementation. Using a combination of advanced data analytics and real-time content generation algorithms, the platform significantly improves engagement metrics (37% increase) and conversion rates (23% increase) while enhancing privacy perception scores by 18%. The findings advance the theoretical understanding of behavioral data utilisation and provide practical frameworks for implementing privacy-compliant, effective advertising personalisation that responds dynamically to user behavior patterns.

Introduction. Interactive advertising has become a powerful tool for engaging consumers and influencing purchase decisions in the digital marketplace [3,7]. Despite technological advancements, there remains a significant gap between data collection capabilities and the practical implementation of personalisation strategies that respect user privacy while maximising engagement. This research addresses this gap by developing an integrated platform that transforms behavioral data into customised advertising content.

Research Objectives. The primary objective of this research is to develop and implement an interactive platform that generates personalised advertising content based on user behavioral data. Specific aims include: (1) designing a scalable architecture that processes multi-channel behavioral data, (2) developing algorithms that identify patterns in user interactions to inform content personalisation, (3) implementing real-time content generation capabilities responsive to immediate user behaviors, and (4) evaluating the platform's effectiveness in enhancing consumer engagement and purchase intention. These objectives align with the growing industry demand for more effective, data-driven advertising solutions that move beyond traditional demographic segmentation [7].

Current Challenges in the Field. Current personalisation approaches face several limitations that inhibit their effectiveness. First, many existing systems operate on isolated data silos, preventing comprehensive user understanding [3]. Second, there is often a significant latency between data collection and personalisation implementation, reducing relevance in fast-paced digital environments. Third, balancing personalisation effectiveness and privacy considerations remains problematic for many systems. Fourth, measuring the direct impact of personalisation on consumer behavior presents methodological challenges. Finally, current approaches often fail to account for the contextual factors influencing consumer receptivity to advertising content [7].

Statement of the Problem. The central problem addressed in this research is the disconnect between the vast amounts of behavioral data collected by digital platforms and the ability to translate this data into meaningful, personalised advertising experiences that respect user privacy while driving engagement and conversion. This disconnect results in missed opportunities for advertisers and suboptimal user experiences characterised by irrelevant content and advertising fatigue.

Issues Resolved Through This Research. This research resolved several critical issues in interactive advertising personalisation:

1. Developing a unified processing framework harmonising behavioral data from diverse sources addressed the data integration challenge.

2. Latency issues were mitigated by implementing a real-time response system using edge computing architecture.

3. Privacy concerns were resolved by developing a consent-based data utilisation framework that provides transparency and control to users.

4. Measurement challenges were addressed by implementing a multi-metric evaluation system that tracks both immediate engagement and longitudinal conversion impacts.

5. Contextual relevance was enhanced by integrating situational variables in the personalisation algorithms.

Research Essence and Conclusions. The developed platform demonstrates significant improvements over existing solutions across multiple performance metrics. Implementing the system in controlled test environments showed a 37% increase in engagement rates and a 23% improvement in conversion metrics compared to conventional targeting approaches. The platform's architecture balances computational efficiency with personalisation effectiveness, maintaining response times below the 200ms threshold critical for real-time interactive experiences. Notably, user privacy perception scores increased by 18% when utilising the transparent data management framework incorporated into the system.

The research contributes both theoretical and practical advancements to the field of interactive advertising. Theoretically, it extends the understanding of how behavioral data patterns can be effectively translated into personalised content strategies. Practically, it provides a scalable framework for implementing privacy-compliant personalisation that demonstrably enhances advertising effectiveness. Future development will focus on incorporating emerging data sources and expanding the content generation capabilities to include multimodal formats.

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