(M)ad to See Me? Intelligent Advertisement Placement: Balancing User Annoyance and Advertising Effectiveness

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Advertising is an unavoidable albeit a frustrating part of mobile interactions. Due to limited form factor, mobile advertisements often resort to intrusive strategies where they temporarily block the user's view in an attempt to increase effectiveness by forcing the user's attention. While such strategies contribute to advertising awareness and effectiveness, they do so at the cost of degrading the user's overall experience and can lead to frustration and annoyance. In this paper, we contribute by developing *Perceptive Ads* as an intelligent advertisement placement strategy that minimizes disruptions caused by ads while preserving their effectiveness. Our work is the first to simultaneously consider the needs of users, app developers, and advertisers. Ensuring the needs of all stakeholders are taken into account is essential for the adoption of advertising strategies as users (and indirectly developers) would reject strategies that are disruptive but effective, while advertisers would reject strategies that are non-disruptive but inefficient. We demonstrate the effectiveness of our technique through a user study with $N = 16$ participants and two representative examples of mobile apps that commonly integrate advertisements: a game and a news app. Results from the study demonstrate that our approach improves perception towards advertisements by 43.75% without affecting application interactivity while at the same time increasing advertisement effectiveness by 37.5% compared to a state-of-the-art baseline.

CCS Concepts: • **Human-centered computing** → *Ubiquitous and mobile computing design and evaluation methods.*

Additional Key Words and Phrases: Mobile Advertisement, Affective Computing, Mobile Cloud

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