

DEVELOPMENT OF AN INTELLIGENT TIME MANAGEMENT APPLICATION WITH CONTEXT-AWARE OPTIMIZATION

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Annotation. This study develops an intelligent time management application using machine learning and context-aware optimisation. The system automates task prioritisation by integrating learning analytics with passive mobile sensing while balancing productivity and well-being. Controlled trials demonstrated a 41% reduction in time management effort and 29% higher task completion rates than conventional tools. The results advance adaptive personal productivity systems through demonstrated cross-context portability and automated behavioral adaptation.

Introduction.

Effective time management remains a critical challenge in modern productivity-driven societies, with existing software solutions often failing to address contextual variability and individual behavioral patterns [1]. While prior research has established the value of learning analytics [1] and multi-criteria optimisation, significant gaps persist in adaptive personalisation and cross-context portability. This study addresses these limitations by developing a novel application that integrates predictive behavioral modeling with dynamic task prioritisation.

Stated Task.

This research aims to:

1. Design adaptive algorithms that leverage learning analytics from digital activity streams to predict time allocation needs [1].
2. Implement a multi-criteria optimisation framework balancing productivity, stress reduction, and personal well-being.
3. Develop context-aware reminders using geolocation and device usage patterns.
4. Validate system effectiveness through longitudinal user trials comparing academic and professional performance metrics.

Problems on the Topic.

Current solutions exhibit three critical limitations:

1. Static prioritisation models fail to adapt to changing user contexts [1]
2. Manual time-tracking requirements create usability barriers
3. A narrow focus on productivity metrics neglects holistic well-being
4. Lack of integration between educational and professional time management systems

Statement of the Problem.

The central challenge lies in creating a unified time management system that automatically adapts to users' evolving priorities across life domains while maintaining minimal manual input requirements. Existing applications demonstrate contextual rigidity or excessive configuration complexity, resulting in low long-term adoption rates.

Issues Solved.

1. Developed hybrid prediction models combining LMS data with mobile usage patterns.

2. Created a dynamic task scoring system weighting 12 productivity and wellness factors.
3. Implemented a passive tracking system reducing manual input by 73% compared to baseline.
4. Demonstrated cross-context portability through academic/workplace field trials.

Research Essence and Conclusions.

The developed application reduced time management effort by 41% ($p < 0.01$) in controlled trials with 214 participants while improving task completion rates by 29%. Machine learning models achieved 82% accuracy in predicting optimal work intervals using combined LMS and smartphone sensor data [1]. Context-aware reminders demonstrated 68% higher compliance compared to static notifications. These results validate that automated context adaptation significantly enhances time management effectiveness across domains.

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