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Park Ments: A Revolutionary Parking Application for the Modern City

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Abstract: *With the exponential growth of urbanization, parking availability in cities has become a critical challenge that impacts traffic flow, commuter stress, and environmental sustainability. "Park Ments" is an intelligent parking management solution that integrates mobile technology, cloud computing, and machine learning to provide a seamless parking experience. This paper presents a detailed overview of the Park Ments application, encompassing its system design, architecture, feature set, implementation, and future scalability. Users can search, book, and navigate to nearby available parking slots using real-time data. The application leverages a Firebase backend, a Kotlin-based Android frontend, and Google Maps API for interactive mapping and geolocation services. The system aims to minimize traffic congestion, enhance parking efficiency, and support urban smart city initiatives through cost-effective, scalable, and user-friendly technology. Additionally, this paper discusses the testing results, challenges, and future integration possibilities with AI-based predictive analytics to evolve with dynamic city needs.*

Keywords: Smart Parking, Mobile Application, Firebase, Kotlin, Real-time Tracking, Urban Mobility, Navigation, AI Forecasting

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