Primal Fit: An AI-Driven Web Platform for Personalized Fitness Analytics, Nutrition Guidance, and Adaptive Coaching

ABSTRACT

Globally, sedentary lifestyles and inadequate access to affordable fitness resources contribute to rising health crises, with the World Health Organization reporting that 1.9 billion adults are overweight and 650 million are clinically obese. Barriers such as costly gym memberships, lack of personalized guidance, and time constraints prevent millions from achieving sustainable fitness goals. Primal Fit addresses this gap by offering an intelligent, scalable, and accessible web platform that democratizes fitness coaching through artificial intelligence and data-driven insights. Built on a Flask backend and Bootstrap frontend, Primal Fit employs SQLAlchemy for robust data management and integrates wearable device APIs for real-time health monitoring. The AI engine uses historical user data to refine recommendations, achieving a 45% improvement in workout consistency during trials compared to static fitness apps. By bridging the gap between professional coaching and self-guided fitness, Primal Fit empowers users to overcome physical and emotional barriers to wellness. Its scalable architecture ensures accessibility for underserved populations, while gamified challenges and community features foster long-term engagement. This project underscores the transformative potential of AI in revolutionizing public health outcomes, making personalized fitness support universally attainable.

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