

CONTEXT-AWARE MODELING OF AI ASSISTANT FOR NUTRITION PLANNING, WORKOUT ROUTINES AND WEIGHT LOSS PROGRAMS

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Abstract. *Personalized health and fitness management requires sophisticated systems that can adapt to individual user contexts, preferences, and dynamic health conditions. This study presents a context-aware AI assistant model for nutrition planning, workout routines, and weight loss programs, utilizing the Calculus of Context-aware Ambients (CCA) formalism. The proposed model represents key entities including the AI Health Assistant, Nutritional Database, and Fitness Tracker as distinct ambients that interact dynamically based on real-time user data, biometric feedback, and environmental conditions. The model demonstrates how context-aware interactions between these components can optimize personalized recommendations, adapt meal plans based on dietary restrictions and goals, customize workout intensities according to fitness levels, and adjust weight loss strategies in response to progress tracking. By enabling continuous adaptation to changing user contexts such as schedule constraints, and health conditions, the system provides personalized health management that improves user outcomes.*

Key words: AI Health Assistant, Personalized Nutrition, Fitness Planning, Weight Loss Programs, Calculus of Context-aware Ambients (CCA), CPS, CPSS, ViPS.

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