SENG 696 Agent-Based Software Engineering

Multi-Agent Daily Planning System (MADPS)

Report 1A
System Specification

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1A. System Specification

0.1 Overview

System Name: MADPS Multi-Agent Daily Planning System.
Primary Users: Individuals (students/professionals) planning their daily schedule.
Context: Web/desktop UI with local agent processes.

0.2 Scope & Functionalities

- **Task Intake & Management:** Create/edit tasks, deadlines, dependencies, effort estimates, tags.
- **User Modeling:** Learn energy/productivity patterns from completion history and feedback.
- **Planning & Adaptation:** Generate daily schedule; re-plan quickly after disruptions (overruns/new tasks).
- **Priority Policy:** Combine deadlines, importance, and learned preferences.
- **Visualization & Control:** Calendar-style view; drag-and-drop with immediate reconciliation.
- **Notifications:** Start/stop nudges, conflict alerts, buffer warnings.
- **Storage:** Local DB (SQLite/PostgreSQL) with export to JSON/CSV.

0.3 Constraints, Assumptions, Non-Goals

Constraints: No external context integrations (weather/traffic). Single-user setup. Re-planning latency $\leq$ 1.5s for typical day ($\leq$ 40 tasks).
Assumptions: User supplies core task metadata. Energy model starts generic, personalizes over time.
Non-Goals: Cross-user coordination, resource booking, travel routing, mood detection.

0.4 Success Metrics

- $\geq 25\%$ fewer deadline violations vs. rule-based baseline.
- $\geq 20\%$ improvement in on-time task starts.
- User satisfaction $\geq 4/5$ after 7 days.