

NebulaByte AI Consultation - Controller Agent Decision Logic

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Participants: Dr. Sarah Chen (Lead AI Architect), James Wilson (ML Engineer), Emma Thompson (Data Scientist)

Controller Agent Decision Logic Specification:

The Controller agent is the central orchestrator that determines which agents to engage for each query. The decision logic follows a two-tiered approach:

Rule-Based Routing (Primary): 1. PDF/Document Queries: - Keywords: "pdf", "document", "file", "upload" - Action: Route to PDF RAG agent

2. Academic Paper Queries: - Keywords: "paper", "research", "study", "arxiv", "recent papers" - Action: Route to ArXiv agent

3. Current Events Queries: - Keywords: "latest news", "recent developments", "current events", "today" - Action: Route to Web Search agent

4. Default: - All other queries route to Web Search agent

LLM-Based Enhancement (Secondary): - For complex queries, use Groq API to refine routing decisions - Context-aware agent selection based on query intent - Dynamic combination of multiple agents when appropriate

Logging Requirements: - Input query - Routing decision with rationale - Agents called - Documents retrieved - Final synthesized response