

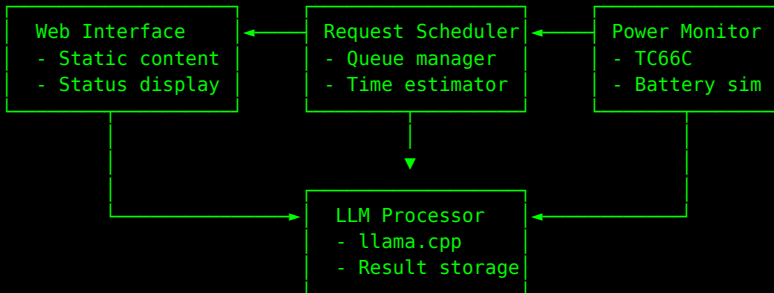
Solar-Powered LLM System

with Delay-Tolerant Networking

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System Architecture



System Components

- ▶ Web Interface for user interaction
- ▶ Request Scheduler with power-aware processing
- ▶ LLM Processor using llama.cpp
- ▶ TC66C USB-C Power Monitor

Features

Implemented

- ▶ Power-Aware Scheduling
- ▶ Request Queuing
- ▶ Static Web Interface
- ▶ TC66 Power Monitoring
- ▶ Llama.cpp Integration

Planned

- ▶ Weather Integration
- ▶ Integration with solar controller
- ▶ Data collection to tune and refine power estimates
- ▶ Common prompt caching

Accept requests during low-power periods - queue requests and process when energy is available.

Hardware Implementation

Equipment

- ▶ Solar panel setup (simulated)
- ▶ TC66C USB power monitor
- ▶ Battery system (simulated)
- ▶ Low-power LLM optimization



SBC (RPI 4 8GB)

Power Management

Battery Level:

[|||||||||||||||||||||||||||||||||||||||||] 85%

Live Demo

Access the System Demo

<https://dtnllm.mattburns.info/>

References



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