RTOS Graduate Project Proposal: Networked RTOS

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Project Overview

Our project aims to develop a TCP/IP stack for the TM4C RTOS, enabling WiFi communication. This will enhance the RTOS's functionality in various applications. The objectives include developing a TCP/IP stack for TM4C RTOS, integrating the ATWILC1000 WiFi module with the TM4C123GH6PM microcontroller, ensuring reliable WiFi communication, optimizing for varying latency, and offloading tasks to a secondary TM4C microcontroller if needed. The methodology involves a literature review of existing TCP/IP stack implementations, setting up the TM4C123GH6PM and ATWILC1000 module, developing or adapting a TCP/IP stack, integrating the stack with the RTOS and testing, optimizing performance, and documenting the process and preparing a final report. The expected outcome is a functional TCP/IP stack integrated with TM4C RTOS, enabling reliable WiFi communication for applications like IoT and remote monitoring. The required resources include TM4C123GH6PM microcontrollers, ATWILC1000 WiFi modules, and development tools and software.

This project will enhance our understanding of network protocols and embedded systems, contributing to a versatile and powerful RTOS. By achieving these objectives, we aim to provide a robust solution for WiFi communication in embedded systems, which can be utilized in various applications, thereby broadening the scope and capabilities of the TM4C RTOS.