John Conway
CMSC 498 Outline
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I. Introduction
    A. Overview of my role in the company.
        1. Intern at Aegis, Inc.
        2. Working on their NRC Projects
    B. Brief overview of my project.
        1. Overview of their NRC product
        2. I will be developing their next evolution of the project
    C. Outline of the rest of my paper, following my progression through
        different aspects of my project.
II. Writing a Kernel Driver
    A. Synchronous Serial Controller (SSC) and an I2S Bus
        1. Writing a driver take I2S Bus input from a micro-controller's SSC
    B. Grabbing the data using Direct Memory Access
    C. Using a character driver to send this information to user space
        for processing
    D. Issues and complexity of embedded programming and Linux
III. Writing the Userspace Code
    A. Looking at the previous NRC code
        1. Difficulties in reading code you have not written
        2. Little Documentation to Work With
        3. How to change this code to work for the new product
            a. There is a significant change to hardware design.
    B. Starting to change the code.
        1. Writing new code alongside others code
    C. Looking at performance
        1. Optimization
            a. What can we do at compile time to get speed
        1. Profiling the code.
            a. Where is the code being slow, how to fix it
        2. Analyzing Performance of Embedded Programs
            a. How I used the information from optimization, profiling,
                and lots of testing to find out what to do next.
            b. To move to a new board, or rewrite the code?
    D. Rewriting the entire userspace program
IV. Conclusions
    A. Lessons Learned
        1. Coding in a professional environment
        2. Working with prewritten Code
        3. The research and development process
        4. Embedded Software Development
    B. How to apply my experiences to future work