

Open Source Spectrometer + Embedded GUI + μ Linux

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Spectrometer

Source Components for prototypes

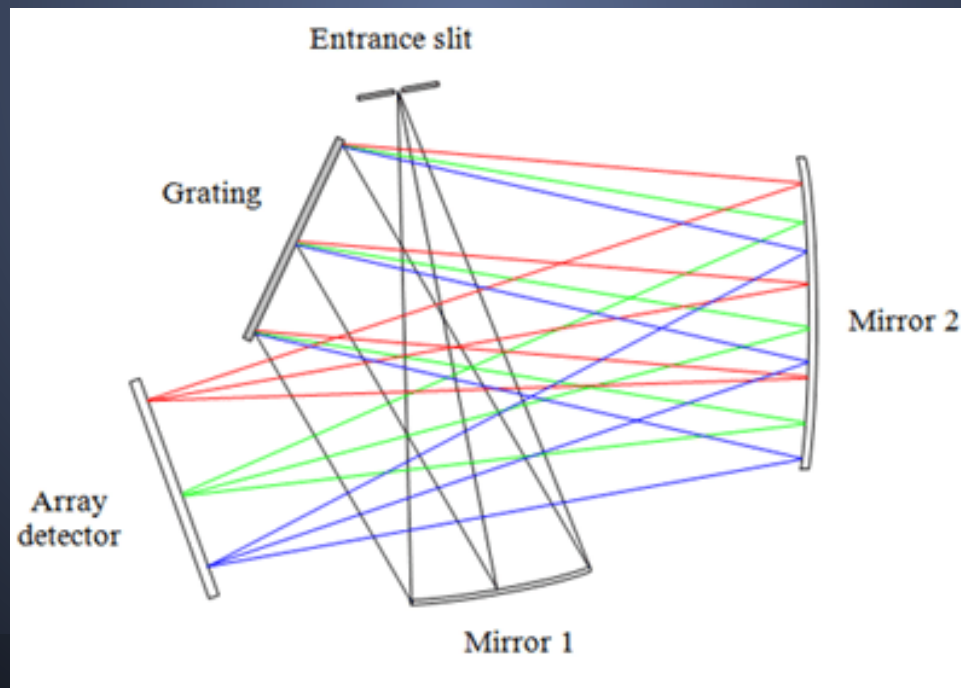
- Working rough prototype using lab optics
 - Freecad and AutoDesk Inventor
 - CNC'd mirrors in polycarbonate
- Next Step: Aluminum and Electronics
 - Linear CCD integration
 - Determine mirror profile (round is cheaper)
 - Enclosure Design for securing components

Crossed Czerny Turner

Commonly used in commercial designs

More compact than other designs

Done using standard focal lengths



μLinux

Major progress on board layout

Stew-down of Olimex's designs

Reduce bells and whistles

Current Specs:

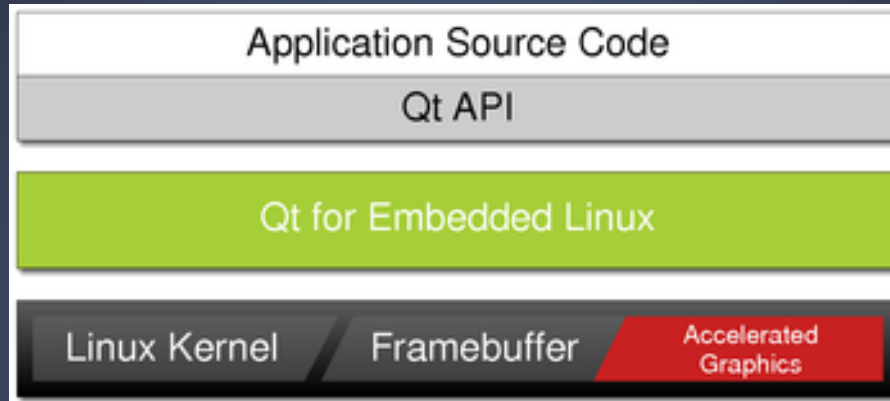
4-Layer (Great Fun to be had!)

512mB DDR RAM

Software Overview

1. Successfully Installed Debian 
2. Configured QT Embedded for Development
3. LCD & Microcontroller Complications
 - (New Hardware Required)
4. After hardware, GUI development should be simple

Qt for Embedded Linux



- "Qt for Embedded Linux is a C++ framework for GUI and application development for embedded devices."
- "Qt for Embedded Linux applications write **directly to the framebuffer**, eliminating the need for the X Window System and saving memory."

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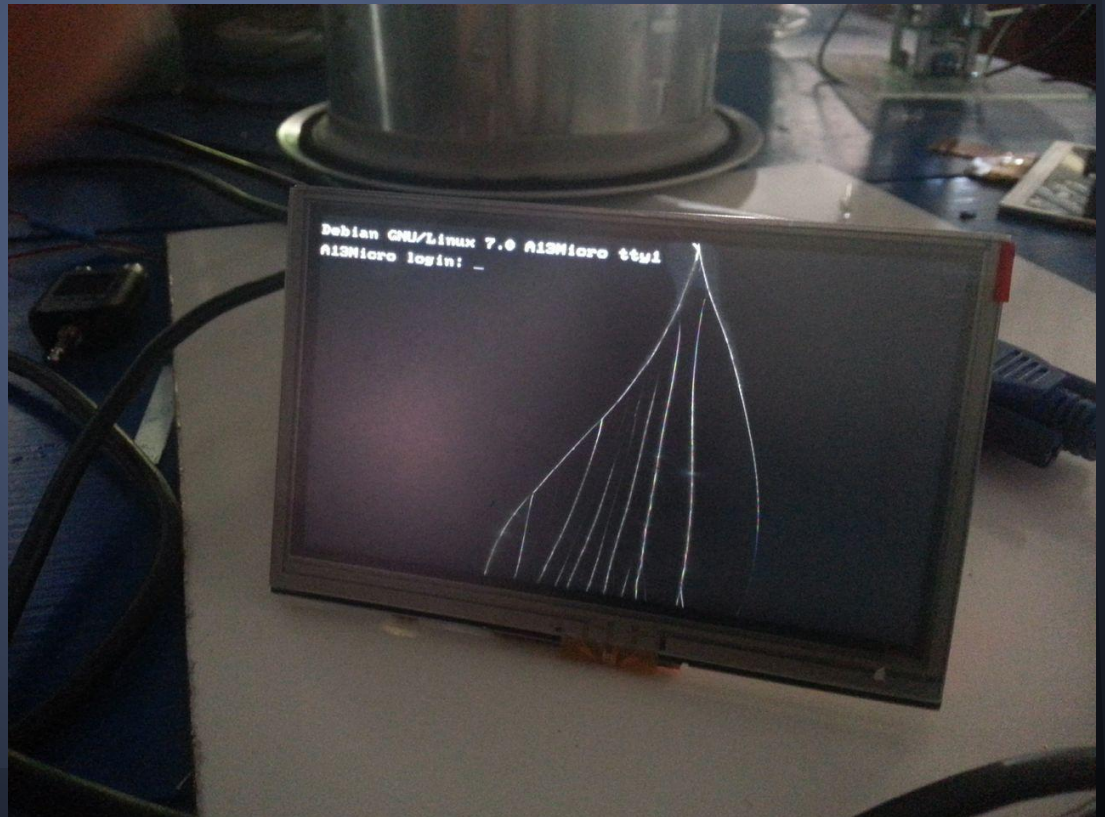
Software Development Milestones

- Obtain Basic Hardware
- Get Debian Running
- Set Up Wireless
- Communicate with Serial over Bluetooth
- Install Basic Programs
- Configure Static IP & SSH
- Hello World Program & Toggle A LED
- Install XFCE
- Buildroot: Install Cross Compiling ARM Toolchain
- Build QT for Embedded Linux from Source



Complications (OLIMEX)

- Not enough RAM (they lied!)
 - Debian builds with LCD support are hardcoded to 512MB
- Cracked LCD



Project Documentation

http://nickguthrie.com/embedd_gui_bin/doc/notes.html

- Using Emacs with Org-Mode to generate HTML documentation so that people can duplicate my results
- Careful documentation of all resources, links, & notes

Pending Milestones

- Configure LCD Screen
 - Configure Output to Touchscreen
 - Successfully Receive Touch Input
 - Build a QT Button that does Something
- Design Interface for Vital Vio Controller
- Design Communication Protocol between GUI and Lighting Controller (Ethernet)

Not Scared of Commitment



Embedd GUI

Website Blog Repository

The Embedded GUI Framework aims to be a “drop in” interface for embedded developers to rapidly incorporate touchscreens into projects.

Repository never updated

Blog updated 1 week ago



Thanks To



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OPEN SOURCE SOFTWARE

Sean O' Sullivan

Prof. Moorthy

Prof. Goldschmidt

RCOS Members