

# BeagleBone Black project

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# Tasks

- **Compile embedded Linux for BeagleBone Black**
- **Develop C application which uses**
  - **TCS34725 RGB colour sensor**
  - **L3GD20H 3-axis gyroscope**

# Compiling Linux

## ■ Buildroot

- custom Linux kernel 3.12 with patches for Texas Instruments SoCs
- U-Boot 2016.03
- gdbserver for remote debugging
- openssh for remote connection
- set of elementary programs BusyBox

# Files

- FAT32 boot partition
  - X-Loader - MLO
  - U-boot binary - u-boot.bin
  - Linux kernel - zImage
- Linux partition
  - filesystem - rootfs.ext2

# Configuration

- Allowed remote login for root user using password
  - /etc/ssh/sshd\_config
  - PermitRootLogin yes
  - otherwise turn off!!!
- Set static IP address
  - /etc/network/interfaces
  - iface eth0 inet static  
address 192.168.1.2  
netmask 255.255.255.0

# Development

- IDE Eclipse Oxygen from October 2017
- remote debugging
- both devices in 192.168.1.0 subnet

# Sensors



(a) TCS34725 RGB colour sensor



(b) L3GD20H 3-axis gyroscope

# Soldering

Figure: BeagleBone Black with HAT with sensors



# Introduction

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