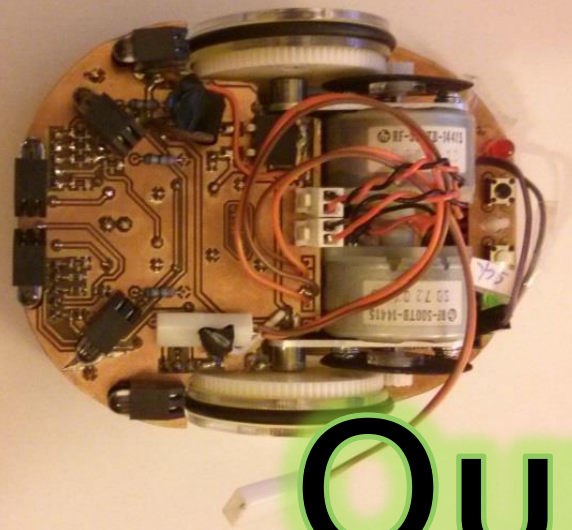
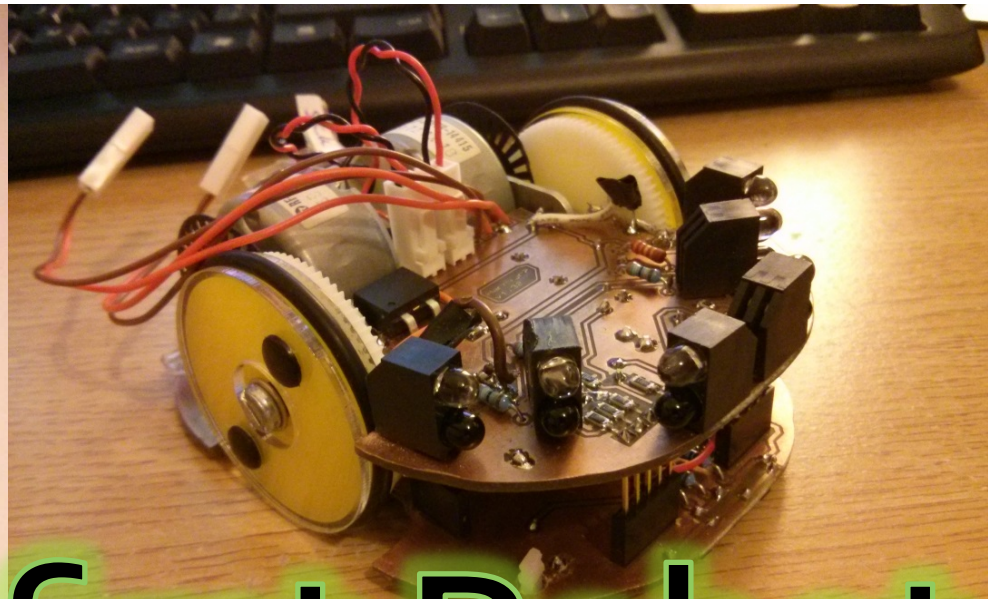
Jason

Luke

Milan

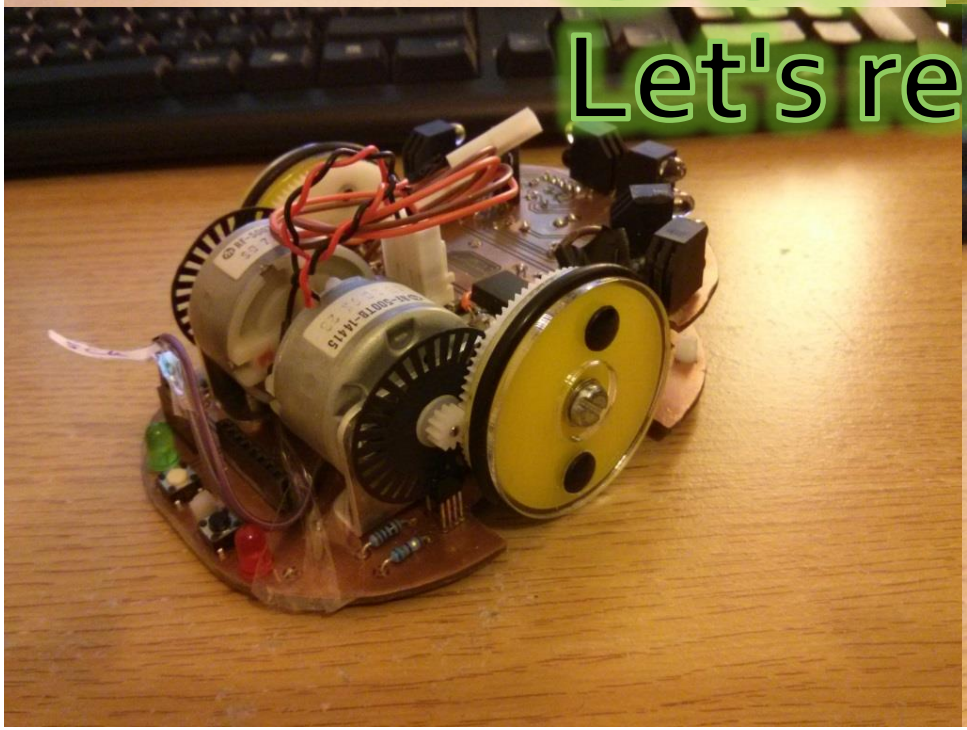
Rob

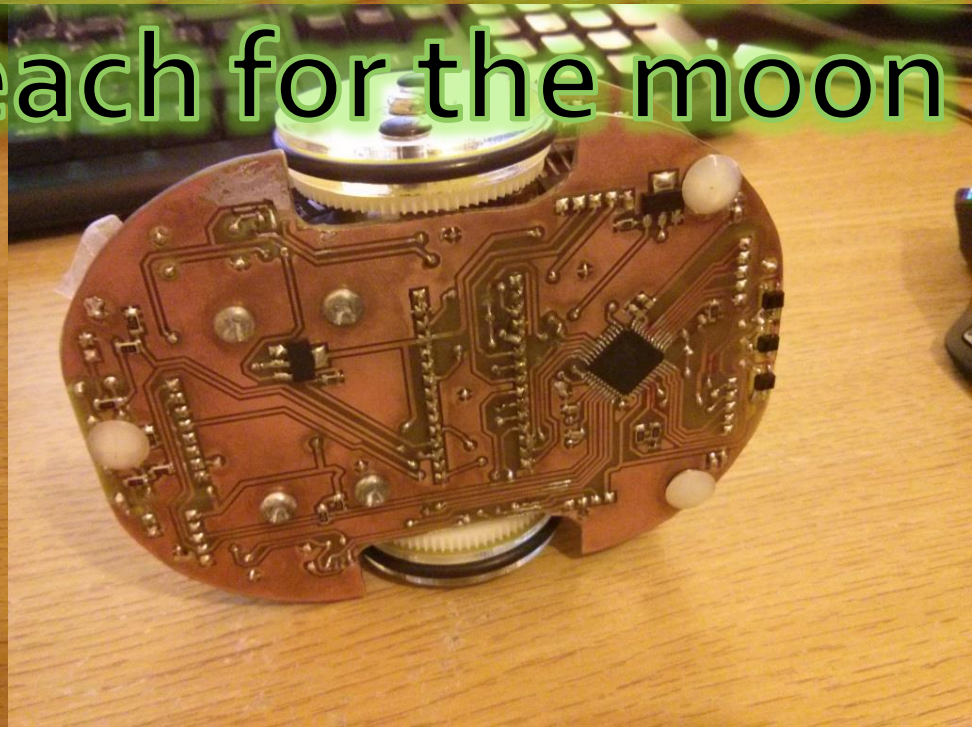




Our first Robot

Let's reach for the moon





The Problem

We need to talk to:

6 Wall Sensors

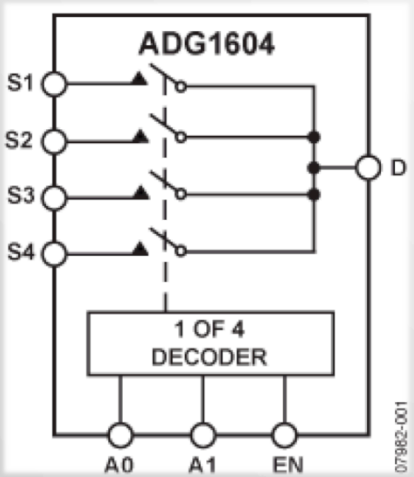
5 Line Sensors

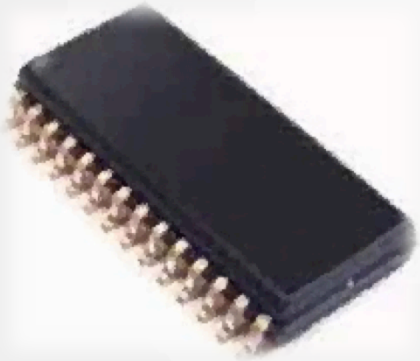
1 Battery Sensor

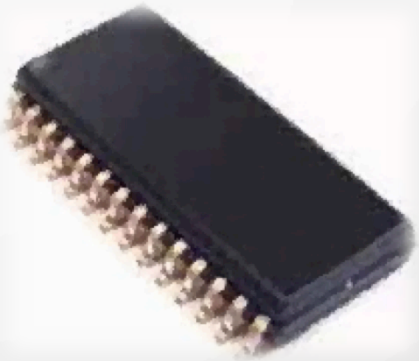
2 Motors

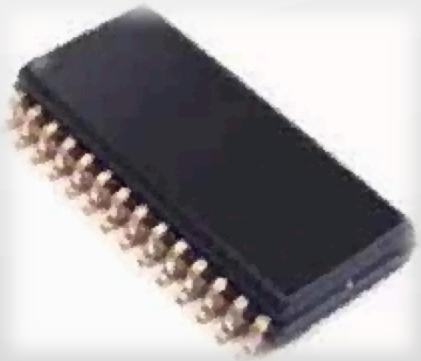
Options

Analogue Multiplexer & Port Expander



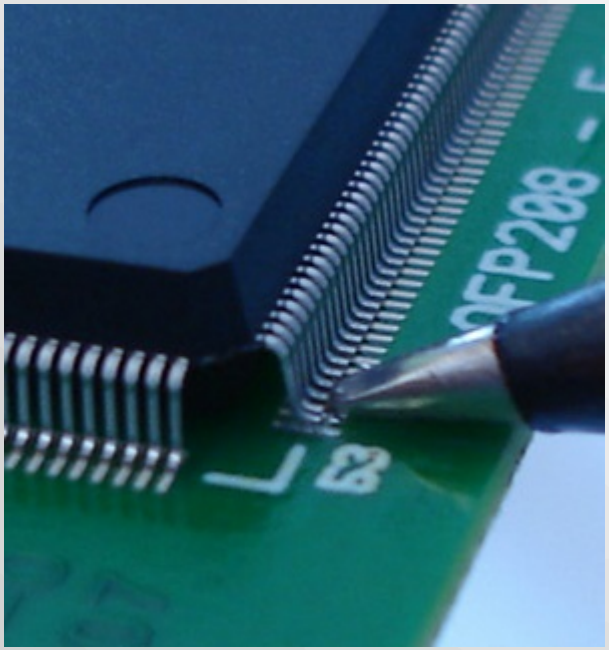


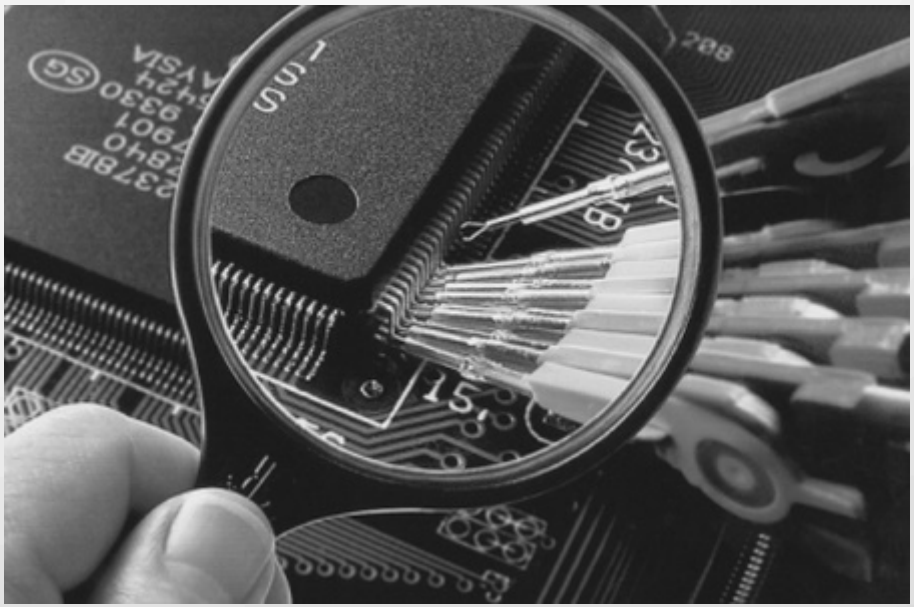




Options

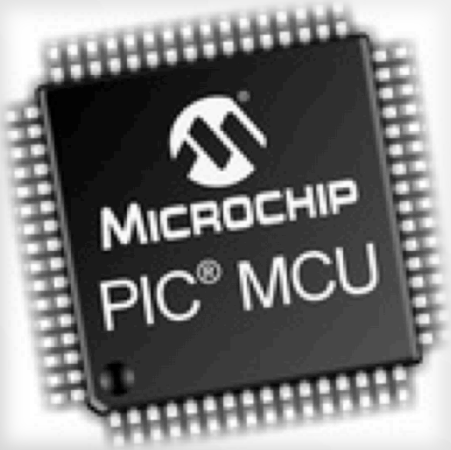
Finer pin pitch device with more ports

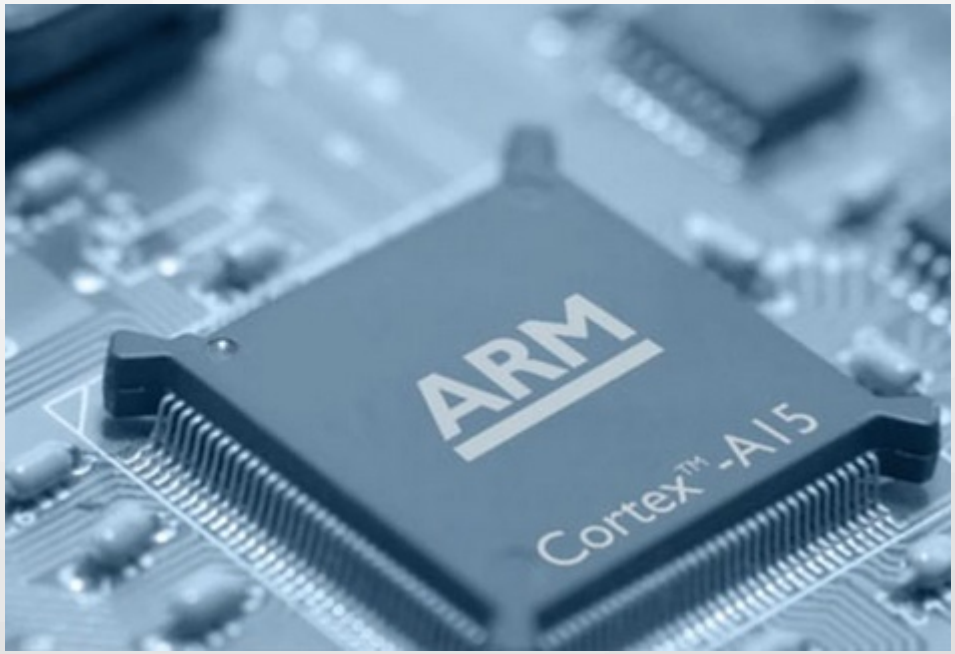




Options

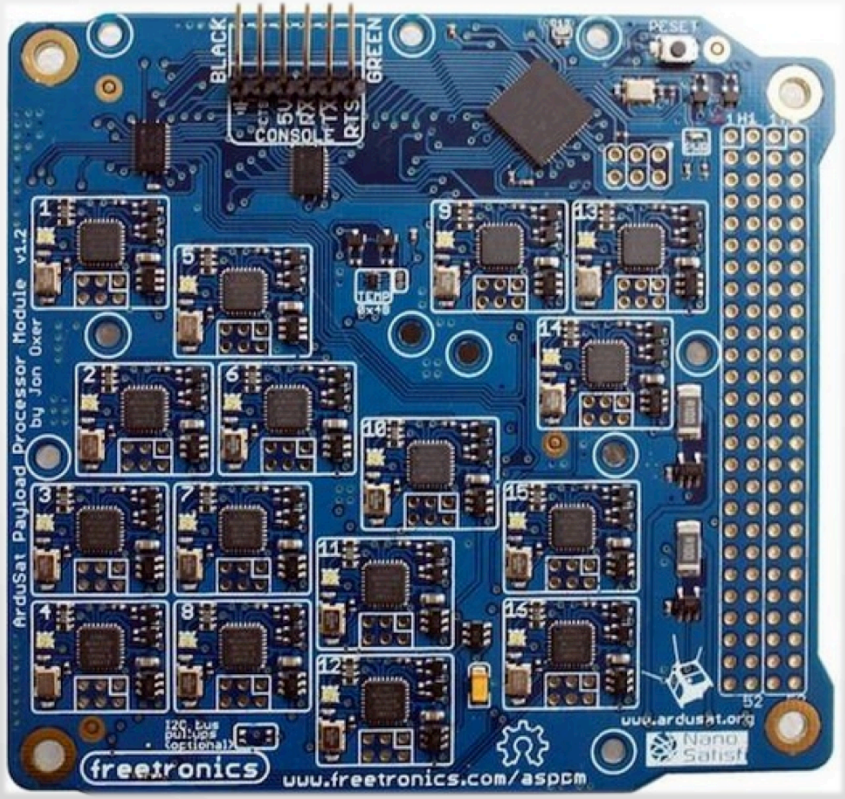
Different microcontroller family



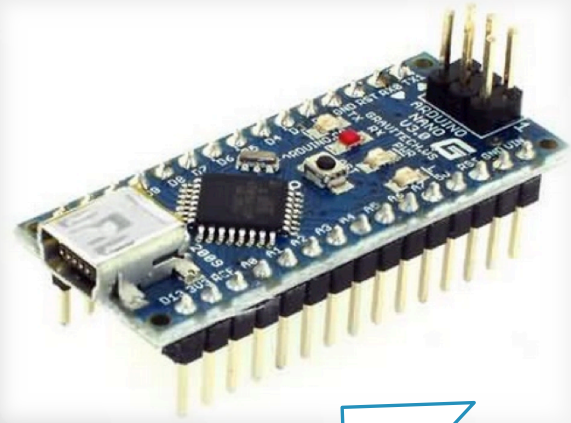


Options

Dual microcontroller design



And we decided

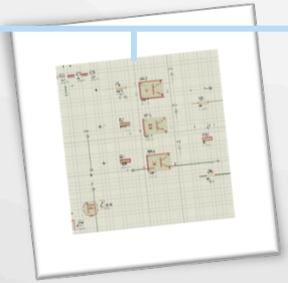


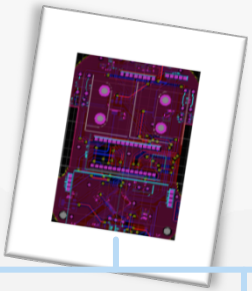
SPI

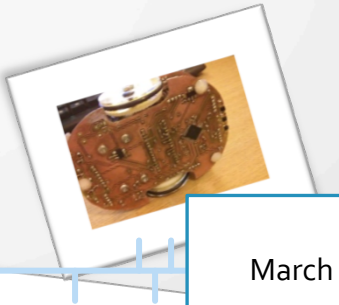
I2C

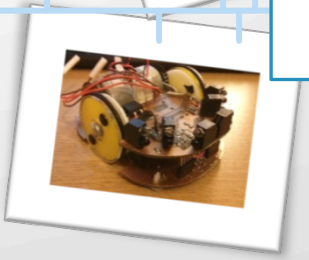
Our Timeline

November









March

Then came the problems…

- Never got round to incorporating the wireless link
- Cracked the LCD screen (twice!)
- Forgot to leave space for balance feet
- Forgot to add a programing header so had to use the Arduino to program the main board
- Didn't account for wheel mount framework so couldn't remove Arduino and had to cut back top boards
- Assumed a different pin could be used for the SPI SIave select
- Wheel encoders didn't work
- Arduino code did not run on the ATmega32U4
- SPI bus didn't work!!
- There are two different I2C addressing models. Well, two ways to describe the same address.
- The system locked up after a certain amount of time
- …and now it's 4am on the morning of the competition and I just realised I don't know how to write line following code!

What's next?

- Single MCU design
- Migrating to ATxmega128A3U
  - Same pin pitch
  - More pins
  - More versatile configurations
  - But it's 3.3v max
- Drive train??

Thanks For Listening