Radio Controller

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## Introduction

The robot uses three omni-wheels to drive itself across the given terrain. To control the robot, we have a radio antenna controller; which can drive the robot according to the stick inputs.

## Problem

The robot needs a radio receiver to correctly pass the controller values back to the microcontroller. The hardware is present, just not the software; it is not understood yet either.

## Solution

Make a standardized way to access radio controller values in the microcontroller; in such a way the code stays readable and we can access it easily later.

## Progress

To start this project off, we did some reading; since no one really knew how radio controller values were processed on Arduino. We found a lot of answers in the RC community, which have been using this technology for ages.

The concept is quite simple, each controller stick has a range of 1000 to 2000. This means that the absolute middle is always 1500.

With this in mind, we can devise how to read these values. If we create a timer, which on the callback of an interrupt gives us the current stick value; we can continuously keep eyes on the value of the specified controller stick.

For example, our “up” stick; would continuously be monitored by the feedback loop created by the interrupt. Because of this, we can always check its data without it being a blocking piece of code.

Later, this can be simplified by making the validation checks more generic, though this is implementation specific. So, we cannot make this with absolute confidence yet.

The code can be found in the same folder as this document.

## Reflection

Implementing this piece took a bit more time, though it was fun. Later on it was improved upon significantly, but only in a POC frame; and not yet in a tidy presentable way.

## Sources

<https://www.youtube.com/watch?v=Z6HR9zeegTE>

<https://www.youtube.com/watch?v=uQIGb8VzX08>