# Snake game on the Arduino Uno R3

Tomas Baublys

Course: Introduction to Robotics

## Design

The project has 4 mains components - the Arduino itself, a joystick, a screen and a button. The screen displays the snake game itself, the snake can be moved using the joystick and a yellow button can be used to change the color theme. The game itself utilizes two regular interrupts: one to pause/unpause or reset the game and the other to change the color theme. The timer interrupt is used to update and display the game on the desired frame rate. The game also uses EEPROM to store the highest score of all time from all the sessions played.

## Timing budget

The timer interrupt gets called every 17500 timer ticks with the prescalar set to 64 (so about 0.07 seconds). That is used to try to keep the game at around 14fps.

## Tests

I have tested my game in every way i could think of and played it a little too much after creating it (it is a lot of fun). The only thing i haven‘t tested is if the frame rate is actually around 14fps or not, would not be surprised if it is not, since it was my first time playing around with the R3 clock, however after playing around with the value stored in OCR1A register it does appear to be working correctly, so i call it a success.

## Known issues

After testing my project to the best of my abilities, the main issue remaining is with the joystick input. The problem appears when you try rapidly moving the snake in different diagonal directions. I’ve tried to fix it by adjusting the joystick threshold values however, the issue still remains.