Raspberry Pi Camera Car for Tyco Security

Overview
Tyco Security Products presented us with the need to have a small discreet remote controlled surveillance camera that uses a Raspberry Pi. Using a Raspberry Pi was a major requirement for them. This surveillance camera is required to be wireless and movable, and controlled wireless via a mobile app while being able to record High Definition videos. The device has to housed in small discrete object such as a miniature car/spider or self balancing robot.

Objectives
Our goal is to fulfill Tyco Security’s initial project specifications by building a Raspberry Pi Camera that Streams video to the local network. This is to be mobile, and mounted on a RC car that the Pi is to control. The RC Car is to be remotely controlled by a networked phone that also displays the video stream from the camera. Any phone should be able to control the car.

Approach
To build this care we divide the problem into three separate tasks. Controlling the RC car, streaming HD video from a Pi Camera, and designing a web app for control and video viewing. Each of these problems required a different skillset. The car required more hardware knowledge, as its essentially a board hacking issue, the app more a web development issue, and the Camera more Linux development. We separated these tasks as none of us initially had the relevant skills. The Camera and the app were both mostly coding problems, so they were solved in an IDE. To hack the car, we researched RC RX chips and found the one most ready for control and found a car using it.

Outcomes
The end result was a flexible, reliable surveillance vehicle capable of streaming live HD video to any local device. The stream is flexible enough to adapt to Tyco’s security suite, and the device can easily be controlled by any modern smartphone. Tyco can take our code and adapt it to any mobile surveillance device.