ZoomR is a wireless video capture system that connects the FLIR Duo Pro R camera to an interface monitor that allows the user to:

- Record data on top of a moving car
- Switch between infrared and visible view

ZoomR is an important step towards the future of artificial intelligence, but more specifically self-driving cars. As opposed to other data collecting competitors, ZoomR makes for a speed data collection while providing wireless connectivity between the monitor and camera system. By featuring the Duo Pro R, users will be able to collect both visible and infrared video which will serve as powerful datasets for the training of autonomous driving cars in night-time scenarios.

The ZoomR consists of 2 separate systems, the exterior camera enclosure and the internal control monitor. (Above) The ZoomR camera enclosure can be seen resting on a car roof, and the monitor can be seen through the passenger window.

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FLIR Duo Pro R Capture System

The FLIR Duo Pro R is capable of capturing video feed in both infrared and visible light. Although initially modeled for the use on drones, our ZoomR capture system adapts it to be used on any car roof.

Features

- 10-Pin Control Interface
- GPS Monitoring
- Visible and Infrared Video
- Bluetooth App: FLIR UAS

Design Specification | Outcome
--- | ---
Enclosure is easily detachable to the roof of a car | ✓
Camera enclosure is IPX5 waterproof | ✓
Ability to pan and tilt | ✓
Car mount can withstand freeway speeds (65mph) | ✓
Anti fog lens | ✓
Systems is powered by a single replaceable battery source and is operational for at least one hour. | ✓
Wireless communication between camera and user monitor for video feed and commands | ✓
Internal temperature of camera stays below 50°C during operation | ✓

Key Electronic Components

- **ATmega 328p**
  - The MCU communicates with all peripherals, interfacing with the HC-05 and LTC 6992 chips

- **LTC 6992**
  - This IC receives a DC value from the MCU to generate pulse width modulated square waves at 50Hz

- **Bluetooth Module**
  - The HC-05 module communicates control signals from the user controller to the Duo Pro R enclosure

- **A/V Transmitter**
  - This transmits analog video wirelessly at 5.8GHz with output power of 600mW

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