Progress Evaluation 3

Remotely Controlled Car via LTE or Wi-Fi

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Progress of Current Milestone (Progress Matrix)

Task	Completion %	Christian	Joseph	Nicholas	Donoven
1. Video Packet Reception & Frame Pipeline	85%	20%	25%	30%	10%
2. UI Video Display Integration	90%	0%	70%	0%	20%
3. Hardware Motor Driver Wiring & Soldering	100%	30%	0%	40%	30%
4. Motor Driver PWM Logic (Forward/Reverse switching)	85%	20%	0%	45%	20%

Discussion of Each

Accomplished Task

- Task 1: Video Packet Reception & Frame Pipeline

PC client can now successfully receive UDP packets from the Pi camera, parse the custom header, and rebuild a full frame. Implemented packet reassembly, validation, and decoding logic. Verified that real camera images arrive correctly and are processed at runtime.

- Task 2: UI Video Display Integration

UI now displays live video feed, taken from the incoming frames. The frames are rendered by the packet receiver and displayed in the UI via web socket. Added support for continuous frame updates instead of static assets. Telemetry overlay still works on top of the video but will need to get the graph working with the live data and also calculate packetloss and display it.

- Task 3: Hardware Motor Driver Wiring & Soldering

There are 3 motor drivers, one for each motor, the motor driver is used to have a separate power supply for the processors than the motors. Wires were spliced to distribute the GND and 5V connections from the raspi to the motor drivers. Each motor driver has 2 wires for controls both are PWM controls.

- Task 4: Motor Driver PWM Logic

There are 2 PWM pins for forwards and backwards. Lpwm and Rpwm are what we are calling each pins. It is not valid for them both to be on at the same time. If they are both off the motor is stopped. Then a frequency from 0-100 is used to control the percentage of the voltage and current going through the motor. The ping that is active determines which direction the motor will run in.

Contributions of Each Member

- Christian Prieto:

Helped organize all cable splitting/extension work. Worked on the PWM testing and H-bridge behavior validation. Tested PWM logic for forward/backward paths.

- Joseph Digafe:

Implemented the UI image/streaming pipeline, enabling live video display. Integrated frame decoding and rendering logic. Ensured telemetry overlays remain synced with the video feed.

- Nicholas Shenk:

Integrated frame decoding and rendering logic. Integrated Pi camera output into packet-sending pipeline. Worked on wiring, soldering, and verifying motor direction control.

- Donoven Nicolas:

Worked on the PWM testing and H-bridge behavior validation. Tested PWM logic for forward/backward paths.

Plan for Next Milestone

Task	Nicholas	Christian	Joseph	Donoven
Control Channel (PC → Pi)	Implement motor command packet format	Assist Pi-side input parsing	UI mapping	UI controls, Test motors w/ real commands
Relay Server Integration	Packet relay logic	LTE/Wi-Fi switching	UI connection status	Failover testing
Fullscreen Video UI + Overlays	-	-	Implement UI redesign	Help with layout & testing

Discussion of Planned Tasks

1. Controls + Motor Integration: We plan on implementing command packets (throttle, steering, brake). Pi will decode and send PWM values to the correct motor driver pins. Safety rules (panic stop, dead-man) will be added.

2. Relay Server for Remote Use: Since the Laptop and the LTE car will have a different IP depending on network changes and so on. A remote server with a static ip is needed to allow both to communicate no matter what network or LTE tower is being used. This lets both the laptop and car to have dynamic IP addresses and the server will relay messages between the two.

3. UI Revamp: Make the entire UI the live video, with telemetry drawn on top this will provide a cleaner look and make efficient use of the screen because as of right now theres a lot of wasted space. Add overlays for latency, bitrate, jitter, and dropped frames.

Meetings & Feedback

Faculty Advisor Meetings:Nov 24, 2025

Faculty Advisor feedback:
Task 1: Use frame ID for detecting loss at decryption.
Task 2:
Task 3:
Tasl 4:

Evaluation by Faculty Advisor

Faculty Advisor Signature: _____ Date: 11/24/25

Evaluation by Faculty Advisor

Faculty Advisor: detach and return this page to Dr. Chan (HC 209) or email the scores to pkc@cs.fit.edu

Member	0	1	2	3	4	5	5.5	6	6.5	7	7.5	8	8.5	9	9.5	10
Nick Shenk																
Christian Prieto																
Joseph Digafe																
Donoven Nicolas																

Faculty Advisor Signature: _____ Date: _____