Team:

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Briefly explain what problem you are trying to solve.

Precise, real-time hand tracking in low-light (dim to near-dark) environments

2) Why is this problem important? Why are you interested in it?

Many real settings (bedrooms at night, lecture halls, theaters) don't provide enough light for reliable vision.

On my Meta Quest 3, hand tracking degrades or fails in dark regions; this limits interaction and accessibility.

3) What is the current state-of-the-art?

There is mature hand tracking solution currently exist but struggles in very low light.

Researches shows progress in work toward hand pose estimation in low light.

4) Are you planning on re-implementing an existing solution, or propose a new approach?**

I try to implement an existing hand tracking solution and explores refinement in low light environments.

5) If you are proposing your own approach, why do you think existing approaches cannot adequately solve this problem? Why do you think your solution will work better?

Current buss solution has limit on low light performance without hardware help. I aim to contribute a pure vision and learning solution to facilitate low light performance of vision solutions.

6) How will you evaluate the performance of your solution? What results and comparisons are you eventually planning to show? Include a time-line that you would like to follow.

I will try to compare the performance of my solution with a popular hand tracking solution and other low light computer vison solutions in low light.

W1–W2: Exploring current solutions, data collecting

W3–W5: Baseline model, first metric

W5–W10: Exploring low light possibilities,

W11: Preparing report