PROGRESS REPORT FOR AQUAPHOTN'S MEGATRAINING PROJECT 25

Heading

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To: Aquaphoton Academy

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1-Introduction

Overview of Today's Progress We have developed the Arduino IDE code and design on Tinkercad and we have integrated the GUI and we added PID control methods. Additionally, we have changed our own schematic symbols and footprints to be suitable for the PCB design.

2-Scope

- Hardware (Ibrahim Ismail & Amr Zeina):

  We have met and discovered errors in our design so we started new routing and now we are changing footprints,symbols and adding new components.

- Firmware:

We have added PID Control method to fix distance to the wall using it, we have done frontend code and all icons added, now we are working on backend code and how to control our system using bluetooth.

- Software: (Mohamed Yousry):

  worked on video stitching process algorithm using openCV library to process video frames using cv2.stitcher_PANORAMA (may use another stitcher later) and also working on improving and speeding up the frame processing by using multi CPU threading
  refrences: - https://pyimagesearch.com/2016/01/25/real-time-panorama-and-image-stitching-with-opencv/
  - https://stackoverflow.com/questions/68323829/video-stitching-using-open-cv
  - https://docs.opencv.org/3.4/d8/d19/tutorial_stitcher.html

3-Status

Challenges Faced

- Hardware: while routing we faced a challenge there are a lot of errors like clearance and unknown pins
- Software: delay in output stitched video between every frame processing per second (low FPS) which I solved by using CPU multi-processing and cv2.Stitcher_PANORAMA which is faster than the defeault stitch
- Firmware: after doing a lot of researches, we discovered way to make distance to the wall fixed using PID Control method. Presently, we are continuing to explore methods to effectively control our system using bluetooth.

4-Conclusion

Significant progress was made in hardware design and software development. We created necessary schematic symbols and footprints, and improved video stitching performance using OpenCV. The u.0pcoming offline meeting tomorrow will make pcb.