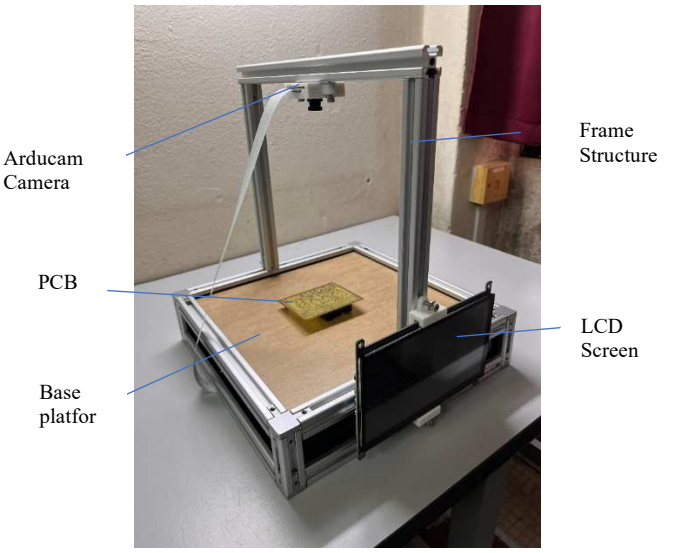

Fig. 7 Prototype of Defects Detection System

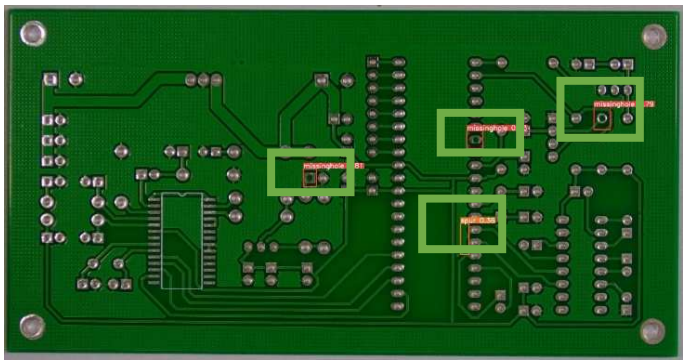

Fig. 8 Final design concept

IV. Conclusion

This study explored the fundamental design elements of an automatic defect detection system. Through the application of product design and development methodologies, particularly Quality Function Deployment (QFD), key design criteria were quantified in alignment with customer requirements. These criteria included reduced manufacturing costs, high accuracy, and good image resolution. Using the concept scoring matrix as a criteria-based decision-making tool, the research identified the most viable alternatives and solutions. Consequently, the study successfully developed a prototype that is less complex, cost-effective to manufacture, and maintains a high level of accuracy.

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