Design of a Mini 3D Printer and Application of Design, Fabrication of a Robot Gripper for the Abu Robocon 2021 Innovation Competition

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***Abstract*—This thesis presents the design and construction of a mini 3D printer and a robot gripper for the Abu Robocon 2021 innovation competition. The author focused on the mechanical and electrical components, selecting materials, designing the frame, and calculating the stepper motor parameters. The project involved detailed design and fabrication processes, but specific performance metrics or tests were not reported. The mini 3D printer and robot gripper were designed to meet the requirements of the competition, but their effectiveness was not evaluated.**

***Index Terms*—3D printer, robot gripper, stepper motor, frame design, mechanical components**

I. Introduction

The thesis focuses on the design and construction of a mini 3D printer and a robot gripper for the Abu Robocon 2021 innovation competition. The author designed and constructed the printer and gripper, focusing on the mechanical and electrical components. The project involved the selection of materials, the design of the frame, and the calculation of the stepper motor parameters. The mini 3D printer and robot gripper were designed to meet the competition requirements, but specific performance metrics or tests were not reported [1]. Published articles on the methods and subject of this project provide context for this English summary [6], [7].

II. Methods

The author designed and constructed the mini 3D printer and the robot gripper. The mechanical components were designed using aluminum profiles, and the electrical components included the stepper motor and control system. The author calculated the parameters of the stepper motor and selected the appropriate components based on the project requirements. The mini 3D printer and robot gripper were designed to meet the competition requirements, but specific performance metrics or tests were not reported [1].

III. Results

The author designed and constructed a mini 3D printer and a robot gripper. The project involved the selection of materials, the design of the frame, and the calculation of the stepper motor parameters. However, specific performance metrics or tests were not reported. The mini 3D printer and robot gripper were designed to meet the competition requirements, but their effectiveness was not evaluated [1].

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IV. Discussion

The author discussed the design and construction process of the mini 3D printer and the robot gripper. The project involved the selection of materials, the design of the frame, and the calculation of the stepper motor parameters. The mini 3D printer and robot gripper were designed to meet the competition requirements, but specific performance metrics or tests were not reported. The author did not provide any evaluation of the effectiveness of the mini 3D printer and robot gripper [1].

V. Conclusion

The author successfully designed and constructed a mini 3D printer and a robot gripper for the Abu Robocon 2021 innovation competition. The project involved the selection of materials, the design of the frame, and the calculation of the stepper motor parameters. However, specific performance metrics or tests were not reported. The mini 3D printer and robot gripper were designed to meet the competition requirements, but their effectiveness was not evaluated [1].

References

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