

Project Sponsor: ISI Industries Intl.

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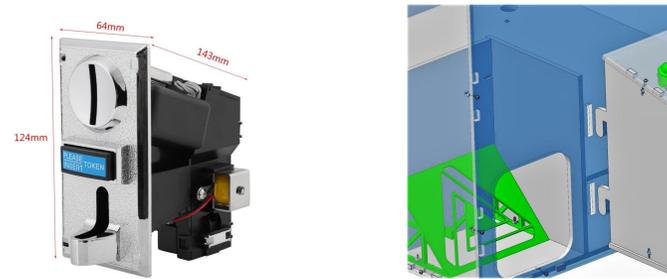
Abstract

Our project is focused on improving upon the functionality, aesthetics, and marketability of currently existing claw machines while maintaining costs low. The machines that are currently in use are obsolete, dusty, and lack any modern features which could improve profit for the operator and offer players new and fresh experiences. By using more economical components that perform as well as their expensive counterparts, we will be able to provide ISI Industries with an affordable solution to upgrade their machines, and drive profits.

Need For Product

The functionality of claw machines has remained relatively the unchanged for most of the ones we see today. They have many inefficiencies that could be fixed with more modern technology. Examples of those inefficiencies are:

- Coin/bill counting is done with another machine.
- Player interaction only occurs after currency is inserted.
- The prizes and appearance of the machine are what draws the players to the game.
- Number of games played and prizes going out are not tracked.
- Maintenance and theme customization must be done at each machine.



Design Concept (cont.)

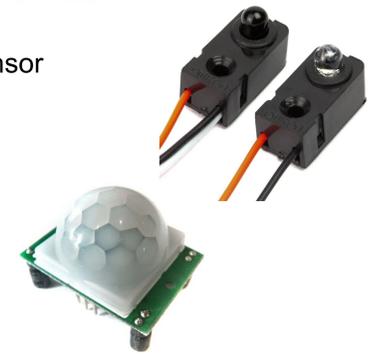
The break-beam sensor is intended to provide operators a way of knowing how often their machines are paying out. The secondary controller will take inputs from the Nayax Card/Bill acceptor and coin counters. The controller will then deliver reports to the operator remotely.

Automated audits will reduce losses, service trips to the machine, and will make operating a machine easier than ever. With an increased profit margin, the machine may give out more prizes, resulting in even more sales.

Inputs detected via motion sensor, currency counter, break-beam sensor, joystick, and topfire button will trigger random, yet captivating Audio/ visual cues which will capture the attention of those passing by or interacting with the machine. This will encourage further interactions and possibly more sales.

Components

- Through-beam photoelectric sensor
- Micro-controller
- Motion sensor
- Currency counter
- Internet module
- Hydraulic claw proximity sensor



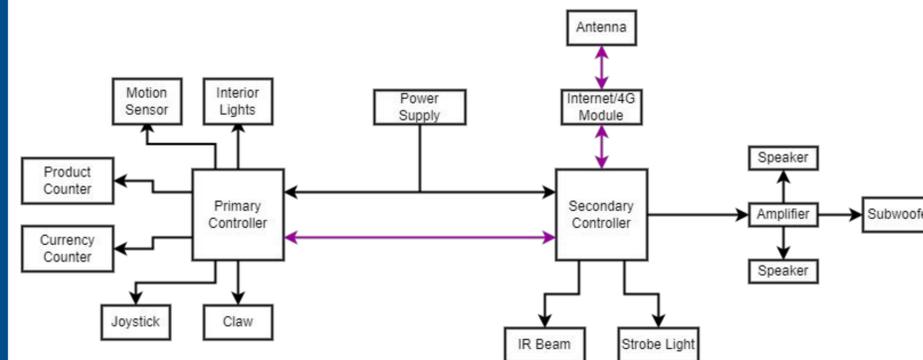
Final Remarks

ISI Industries currently operates 20 machines at several businesses in San Antonio. Although, they do not utilize any smart features or technology. As a result, they created the ISI industries R&D team to develop the Smart Claw Machine and market it as an upgrade to existing machines. This upgrade is designed as an add-on to existing claw machine designs (for now), as it is significantly cheaper than designing an entirely new machine. The total cost of this upgrade is only about \$200.

Along with keeping the upgrade as economical as possible, another feature we integrated was to allow the operator to change light and audio themes remotely, at any time. Naturally, future implementations of our design will require updates to be more user friendly.

One of the features that ISI Industries would like to develop in the future is for operators to adjust settings, such as setting the strength of the claw, remotely and avoid costly in-person service calls.

Functional Block Diagram

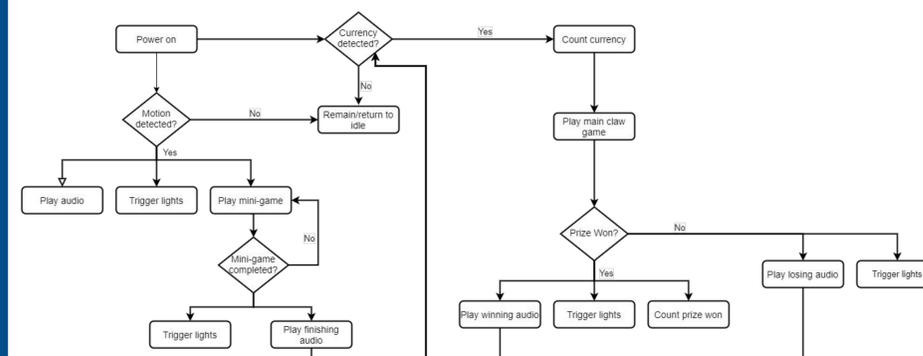


Design Concept

- Break-beam sensor tracks when a prize is won and writes to csv
- Automated audits and service notifications
- Motion sensor and other inputs trigger lights and audio
- API Server
- Upgraded 2.1 Audio System



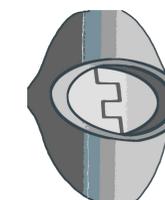
Software Flow Diagram



Acknowledgements

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We would also like to recognize the Student Success Center, UTSA Makerspace, and UTSA ECE department faculty and staff for providing the resources, instruction and support related to this project.



ISI Industries R&D
Providing a meaningful upgrade.

