TableTanks Architecture

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Status Update

Project Summary

TableTanks is an interactive touch table that also interacts with physical objects in the real world.

Finalizing the Design

- Motors and wheels for physical feedback

Parts-dependent:

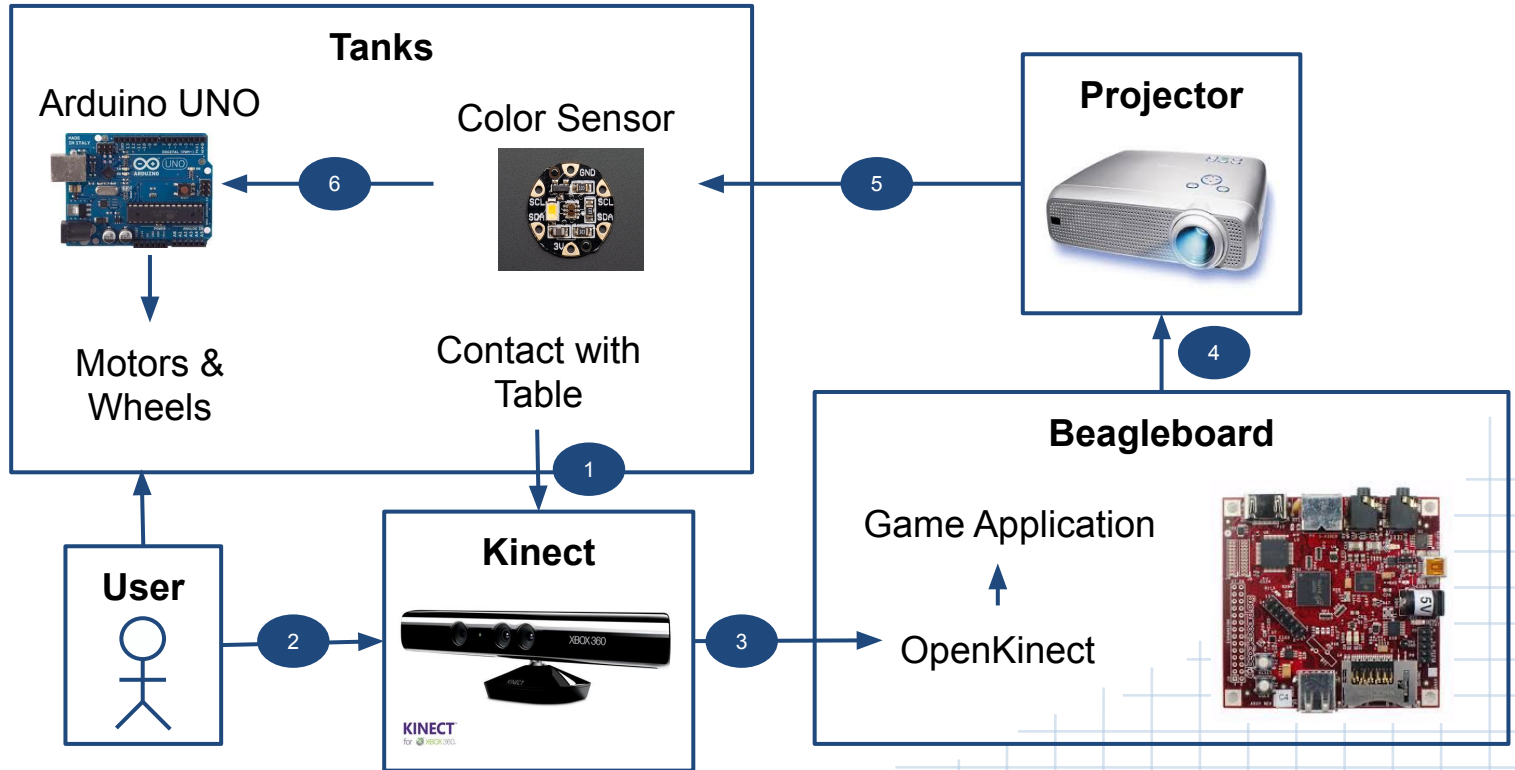- Whether Kinect can detect through the film/while projecting

Status

All parts have been ordered within the budget
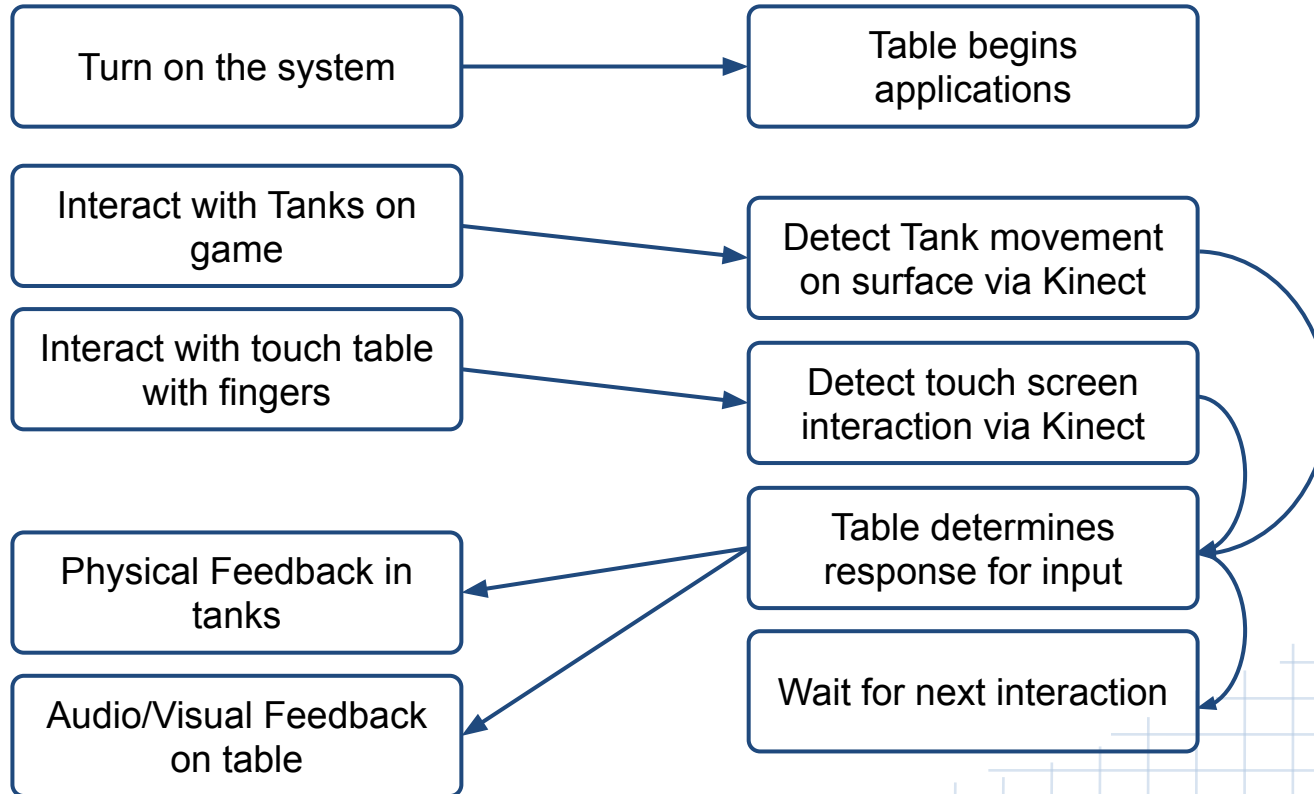
Parts acquired

- Table

Architecture

Tanks

Arduino UNO

Color Sensor

Projector

6

5

Protocols
1. Kinect Depth Image
2. Kinect Depth Image
3. USB
4. HDMI
5. Color-coded light signal
6. Adafruit library

Motors & Wheels

Contact with Table

4

1

Beagleboard

Game Application

OpenKinect

User

2

Kinect

XBOX 360

KINECT for XBOX 360.

3

Use Cases

Turn on the system → Table begins applications

Interact with Tanks on game → Detect Tank movement on surface via Kinect

Interact with touch table with fingers → Detect touch screen interaction via Kinect

Table determines response for input

Physical Feedback in tanks

Audio/Visual Feedback on table

Wait for next interaction

Risks and Mitigation

Risks	Mitigation
Compatibility issues with Kinect on Linux with Dragonboard	Use a Raspberry Pi instead
Touch screen isn't responsive/does not work	Use Dragonboard inputs
Can't identify tanks with QR codes	Use computer vision on Tanks
Wireless communication with tanks (color sensor)	Use wired connection
Projector interferes with object tracking	Mount Kinect above the table
Visibility/readability of projected surface	Add semi-transparent film for increased visibility

Plans for features

Plan A	Plan B	Plan C
- Use Dragonboard with Kinect - Object ID/tracking using QR codes - Communicate with tanks using color sensor - Physical feedback from game pieces - Touch interaction	- Use Dragonboard with Kinect - Object ID/tracking using computer vision - Use RF transmitters - LED feedback from game pieces	- Use Raspberry Pi with Kinect - Object ID/tracking using computer vision - Connect to tanks with a cable