Katamari Seigyo

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*Presenting

Project Concept

- **Before**: Limited interaction with gaming console
- **After:** Console controller for a more interactive and immersive gaming experience

- Controller for the game "Katamari Damacy" and sequels*
- Produced by Namco, praised by critics, sold 500,000 copies and maintained a steady flow of orders over two years *
- Controller emulates Katamari
- Ball rests on ball bearings, full range of motion, 360 degrees of freedom
- Monitored by motion sensors and an Arduino

* See appendix slide if you're unfamiliar

Competitive Analysis

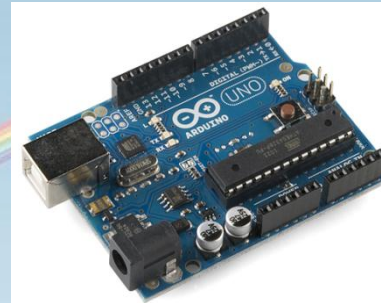| Model	Our Project	Katamari Ball Hack	Golden Tee Golf TV Plug and Play
User Friendliness	• Realistically imitates Katamari ball • Intuitive to use	• Requires user to hold mouse against ball • Use one hand to roll ball	• Portable lap game
Motion Detection	3 axes, optical mouse	2 axes, optical mouse	Unknown
Comprehensive Controls	Yes	No	Yes
Game System	Wired PS2, Wired Xbox connections	Wired PS2 connection	TV AV
For Katamari Games	Yes	Yes	No
Cost	Cradle and hardware $80, Ball price TBD	Not commercially available	$30
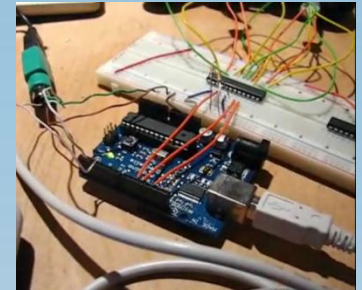
Requirements

- 360 degrees rotation in any direction
- Fidelity to the game actions
- Wired PS2 connectivity
- Comprehensive game controls, including menu
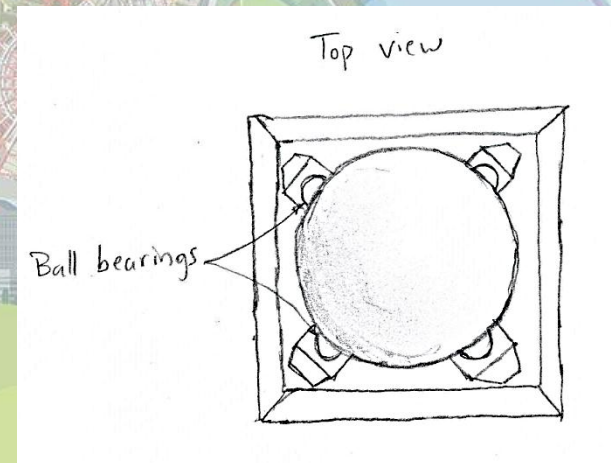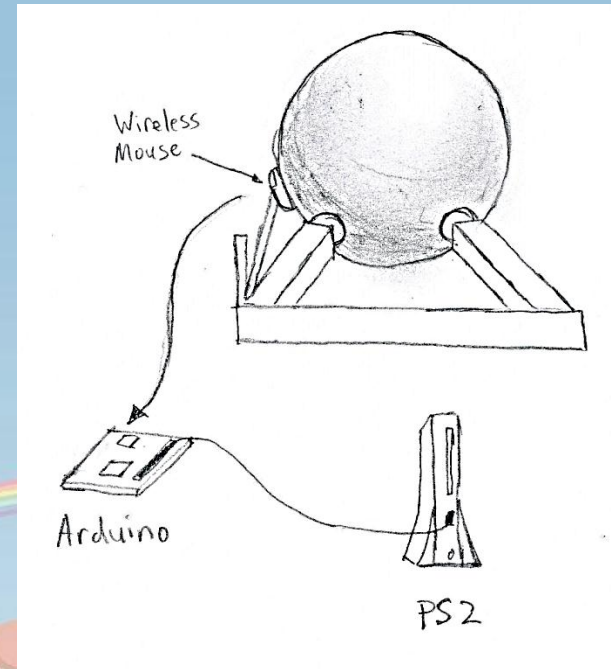- Physical stability of controller

Technical Specifications

- Katamari Ball
- Omnidirectional Ball bearings
- Optical Mouse
- P/S2 converter
- Cradle mechanism
- PS2 controller
- Arduino Uno (16 MHz)
- PS2

Architecture

Player → Ball

Ball → Motion Sensors

Motion Sensors → Arduino

PS2 ↔ Arduino

Wireless Mouse

Arduino

PS2

Top view

Ball bearings

Risks and Mitigations

Risks	Mitigations
One optical mouse cannot detect full range of motion	Change placement of mouse in relation to ball or use two mice
3D rotation implementation	Simpler 2D rotation
Ball falls out of cradle with use	Increase the weight of ball or alter height of the cradle
Large ball could be difficult to roll	Use smaller ball
Friction between ball and bearings makes use difficult	Change type of ball used
Difficulty emulating PS2 controller protocol	Hack into a PS2 controller directly
Cradle tipping over with use	Increase weight of base
Ball deforms against bearings and impedes motion	Use a different ball

Questions?

Before

After
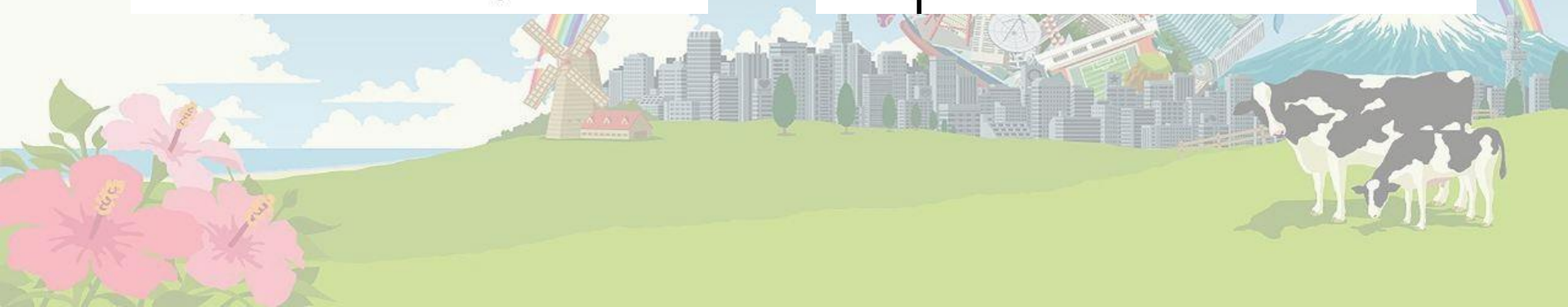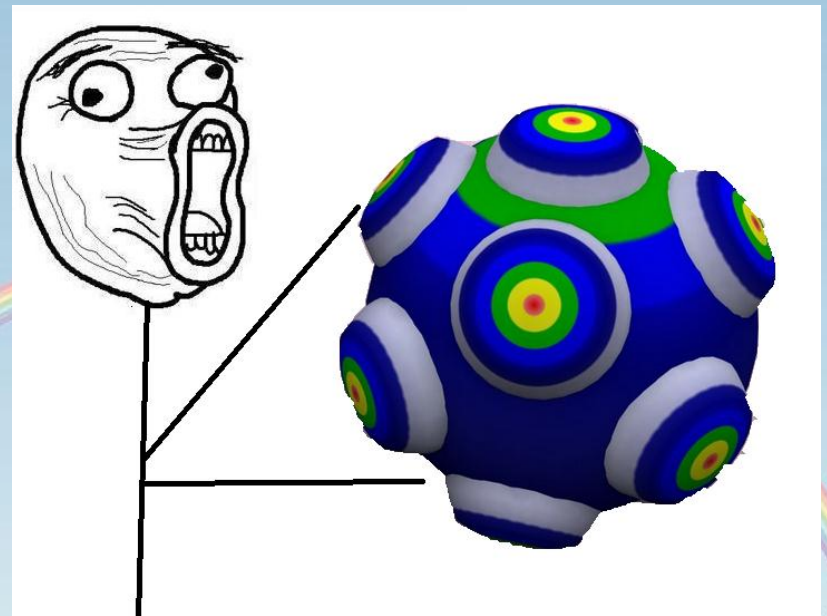
Appendix

- 2004 Japan Good Design Award, featured TIME magazine best games of the year edition, "Excellence in Game Design" 2005 Game Developers Choice Awards

- Versions for PS2, PS3, PSP, PS Vita, Xbox 360, Nintendo Dsi, IPad, and smart phones

- http://www.gamespot.com/news/katamari-rolls-up-half-a-million-sales-in-japan-6142530

Katamari approaches a parking lot- two cars parked on the left, one van on the right

Katamari picks up two cars parked on the left

Katamari then picks up van that was parked on the right