

Final Project Proposal

Year: 2019 Semester: Fall
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Project Name: Digitopoly
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Team Members (#1 is Team Leader):

Member 1: Karthick Shankar

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Member 2: Niraj Menon

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Member 3: Alexander Gokan

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Member 4: Carson Kelley

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1.0 Project Description

Digitopoly is an electronic board game heavily based off of the popular smash hit board game Monopoly. Digitopoly is the answer to the question - how do we combine the best of board games with the best features of an app? Utilizing a medium sized screen to display game progress and automated piece movement and dice input, this game promises to be fun for people of all ages, bringing as much fun to families as the original board did.

2.0 Roles and Responsibilities:

1. Karthick Shankar will take on the role of team leader. His area of expertise lies primarily in the area of software and artificial intelligence. He has had experience with various algorithms related to image processing through avenues in published research. In terms of program management, he has been the program manager for multiple development teams with technical and non-technical team members. He has also been the project manager of a feature while interning over the summer at Hulu to ensure a smooth workflow with accurate deadlines.
2. Niraj Menon will take on the role of systems engineer. Niraj has undertaken work in embedded system engineering which necessitated good top level diagrams, peripheral and component selection, integration of said peripherals and components, and thorough verification of the entire design as a whole. This hands-on knowledge was used in ECE 337 in the design and verification of various hardware components using SystemVerilog, and later on in a web-enabled Verilog simulator he developed for ECE 270.
3. Alex Gokan will take on the role of software engineer. He is a senior in computer engineering, and spent the summer as an intern at Lawrence Livermore National Laboratory, with the signal and image processing research group. His areas of interest are mainly in signal processing and computer vision. He was the intern team leader at Crestron Electronics for designing the high level plan for a new line of DSP products.
4. Carson Kelley will take on the role of hardware engineer. He has the most experience in designing PCBs being the person to design one for his ECE 362 project. This also included the soldering of the PCB and the final packaging for the project. He also will take on some of the responsibilities of the systems engineer to help with making sure the components on the different PCBs in the project will interact correctly.

2.1 Homework Assignment Responsibilities

Legend: KS – Karthick Shankar, CK – Carson Kelley, AG – Alex Gokan, NM – Niraj Menon

<i>Design Component Homework</i>		<i>Professional Component Homework</i>	
3-Software Overview	KS	9-Legal Analysis	KS
5-Electrical Overview	CK	10-Reliability and Safety Analysis	CK
7-Mechanical Overview	AG	11-Ethical/Environmental Analysis	AG
8-Software Formalization	NM	12-User Manual	NM

3.0 Estimated Budget

Category	Description	Budget
Microcontrollers	Main microcontrollers for the dice and the screen	\$200
Peripherals	Gyroscope, motors, Bluetooth	\$100
PCB costs	printing/shipping costs	\$150
Small components/passives	resistors, capacitors, IC's, etc.	\$50
Displays	screen(s) to display information	\$100
3D printing cost	filament/printer rental	\$20
Total		\$620

4.0 Project Specific Success Criteria

1. An ability to transmit the orientation of a die to a microcontroller wirelessly.
2. An ability to send a signal to a mechanism that will move the pieces on the board.
3. An ability to manipulate game state with the use of human interface devices like buttons and a scroll wheel.
4. An ability to display a live game board similar to the original Monopoly board on a screen.
5. An ability to move from one state of the Monopoly game to another.

5.0 Sources Cited:

No external works were used to write this report.