

MDP FINAL REPORT

INCULSIVE GAMES

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Abstract

Video games are inaccessible to blind people and audio games are inaccessible to sighted people. The goal of our game project is to solve this problem by designing a video game which has the ability to bring people together and give enjoyment to anyone who plays games. We decided to design a maze game that is played by both the blind and the sighted simultaneously, allowing them to work together and bridge the barrier between audio and visual based games.

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PROJECT BACKGROUND

Gaming is an amazing thing. It has the ability to bring people together and give enjoyment to anyone who plays games. It can also give anonymity and safety through online play, allowing a person to be, say, or act however they want. Games can be used to de-stress, to unwind, and to escape from troubles in life, for any number of things. Games are about having fun whether by yourself or with others.

There is a problem with games though; video and audio games in particular. The problem with these games are that they are not accessible to certain people. Video games are inaccessible to blind people, whereas, audio games are inaccessible to a sighted person. Steve Engels, a professor at the University of Toronto who designs audio games for the blind, has said that good audio games are unplayable by a sighted person just as a good visual games are unplayable by a blind person. This is exclusionary to both parties and leads to no common ground of an experience between the two groups.

This is a problem to inclusivity because games are meant to be an enjoyable experience but when one cannot play a certain game this leads to nothing but frustration. In this sense, games have become a divisive area in society. The two different types of games have different feedback to the player that cannot be understood by someone unfamiliar with the experience so this needs to be changed.

PROJECT OUTLINE

The fact that video games are exclusive to blind people is a wide subject that needs a lot of attention. Daniel Zingaro, a professor at University of Toronto who is blind, enjoys games and works with Steve Engels on auditory games, has said that games for the blind are just terrible. There are a few good ones according to him such as Entombed, Shades of Doom, and Q9 Action Game, however the vast majority are not enjoyable. Steve Engels attributes this to the fact that most games for the blind are created by sighted people for the blind in an attempt to entertain them. This however just reinforces the issue of games not being taken seriously for the blind because it is an assumed experience, not a verified one.

Video game companies around the world could be more open to making games for the blind. As it is right now there is no real reason for them to create auditory experiences for blind gamers due to the often quoted reasons of there being “no market” or monetary recovery from this prospect. According to Popular Mechanics, there are about 2000 blind gamers which seems justifiable by a company’s standard to not market towards them, however, it is of our opinion that this is because audio games are not widely known or popular. Everyone hears about the new Call of Duty, but no one hears about the latest audio game being made. If audio games were to become more popular we think that the amount of blind gamers would increase.

Many approaches can be made to improve games so that they are always accessible to both

blind and sighted people. Game companies could be petitioned to make their visual games accessible to blind people by adding audio cues to the game allowing the feedback to be audial instead of visual. Games could have multiple settings to allow for certain triggers to be turned on and off, for instance, if a sighted person was playing a game they would not need as many audio cues, whereas, a blind person could enable a setting to increase or alter the way information was conveyed to themselves. Games could be designed with accessibility in mind to be played by either a sighted or blind person regardless of game settings. A list could be made of what makes a game both good and accessible, much like how certain laws outline what a company must do to be considered accessible by all people. The solutions can never fully solve the problem but should be attempted because it is the right thing to do.

PROJECT METHODS

As video and audio games give different feedback to their players, the change that we will attempt is to bring a game experience that can be enjoyed simultaneously by both. The project we will produce is a game that can be played by both blind and sighted people. This will be done by creating a game that has both visual and auditory cues, in addition, this will be a cooperative game due to the feeling that games are more enjoyable when played together.

By making the game both cooperative and capable of giving both types of feedback to the player, the game will make a gaming experience that has no borders. Where audio and visual games have certain limitations to play for the opposite type of player, this game will be capable of being played by either and together. This will bring two different groups of gamers together and offer a fun, shared game experience.

This will be accomplished in phases:

Phase 1 will be Strategy & Research. At this stage, we have to research the issue thoroughly and find out what the barriers to access are and how things are currently. We will also reach out to the community in hopes of collaboration and help. Institutions such as CNIB, Rotary Cheshire Homes, Deaf Blind Ontario Services, and others will be contacted.

Phase 2 is Creative Exploration & Design Development. At this phase we will start developing our solution in an iterative manner, constantly building on our idea. We will also not narrow our field of vision and get too focused on one method of development. We will work with others in the field of gaming and audio games to improve and iterate our solution.

Phase 3 is Testing and Outcome Evaluation. In this stage we will hone down our solution and polish it. Working closely with our contacts, we will use their advice to make the product the best it can be both inclusively and interactively.

CHANGE

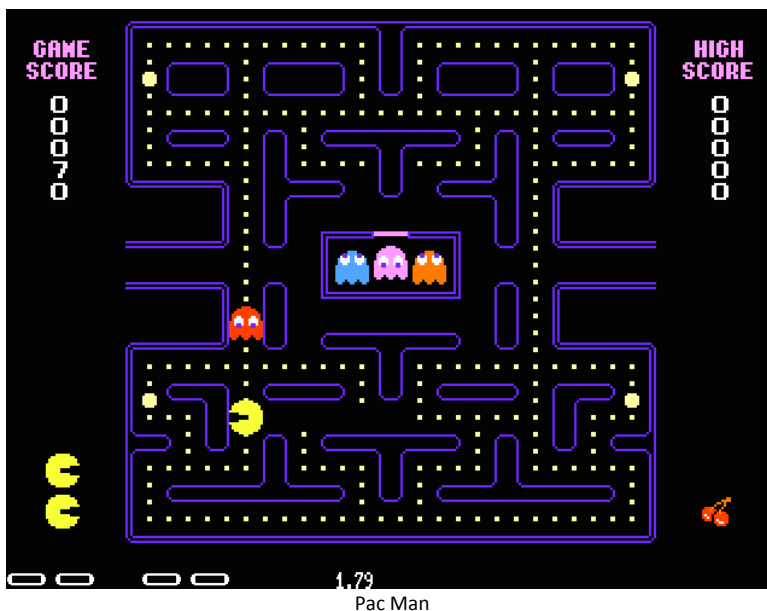
Change must be shown for it to be a success or not. We will quantify the success of our change based on the reaction from gamers. We will ask blind gamers (such as Daniel) to playtest our game with others and ask for player feedback to the experience. We will also upload the game to websites such as audiogames.net to bring the game experience to a wider audience. Another venue we might be able to showcase our game at is the Accessible Arcade which is being considered at the University of Toronto.

Through all these channels, we hope to get feedback that the experience was fun, enjoyable, and inclusive. We hope that the players will feel no borders to play whether they are blind or sighted and that the game execution will be well received. Ideally, this will give inspiration to others to start to create more inclusive games.

PROGRESS

Development has been changing ever since we have talked with others about our idea. At first the concept was to “port” or modify Pac Man to be able to be played by a blind person. Through experimentation and discussion with game designers such as Miguel Sternberg, the assumption (and later, reinforcement) was that we would have to strip away from the game to make it more accessible.

Pac Man requires a lot of visual feedback to be played effectively due to the tight corners and pellet placements. By modifying it to be an audio game we had to lower the difficulty of the maze to the point where it wasn’t really Pac Man anymore. This has been both a blessing and a curse. On the one hand, it has opened up the possibilities of our concept, on the other hand, it has also made this harder to accomplish.



however they were also just reaction based games which are seen as being so-so by blind gamers. So we went back to the drawing board and reassessed the issue and the solutions.

Corey Dean <cd12ke@student.ocadu.ca>
Questions about Audio Games
4 March, 2014 9:20 PM

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Hello Daniel,

I've cc Steve, and my group members, Stephy, Sisley and Cindy, to this email for both a record of our conversation for my group members and in case Steve has any insight into any questions we might ask as well.

The audio games we are trying to make are for a school assignment that is about inclusion but we have been going about it wrong. We haven't asked the right questions and I feel we may have made too many assumptions about how to create a game experience for someone who can't see.

I think we can agree that audio games generally suck and are not taken seriously. However, are there other obstacles blind people face when playing games (outside of not being able to see a screen)? For instance, when playing an auditory game, is there any design elements that make it difficult to interact with the game?

What makes you angry about audio games and gaming in general? If you could change this, how would you like to see it improved?

Recently, I was speaking to Steve and he explained that most audio games are designed by sighted people for the blind, not blind people designing for the blind. He said that the way you should design games are by thinking about mechanics within the auditory realm, such as how we can pick out one person talking in a crowd of people.

I feel we have a lot to redesign and reconsider so I'm hoping I can still send you builds if possible? Also, Steve told me you are usually on St. George campus on Thursday, would it be possible to meet and talk about things in person? I would be available after 1:30 pm on Thursday if that is convenient for you.

Sorry for the long email but thank you for your time.

Sincerely,

-Corey

Daniel Zingaro <daniel.zingaro@utoronto.ca>
Re: Questions about Audio Games
17 March, 2014 7:52 PM

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Hi Corey et al.,

This is of course just one opinion below, but it is an informed one -- I've followed audiogames for the past ten years and wrote a few of my own back in the day!

The biggest reason that present audiogames are generally bad is because there is little money to be made, at least with the present advertising strategies. Generally one person makes a game, gets as far as they can before getting bored, and release a half-finished project. All of that is OK, except for the fact that they then charge for it. Most commercial audiogames are littered with bugs, and this has come to be somewhat acceptable.

One major interaction issue is that games are generally too simple. When they're not too simple, they're too complex. We don't have a good handle on how to make something in between space invaders and an FPS. I think we skipped over two decades of action and platform games, and there's a lot of potential there. Most audiogame authors don't have experience with mainstream games -- probably this is where you and your team would have an interesting perspective.

I think Steve is away this week -- perhaps we can have a meeting next Thursday?

Ahh wait -- you asked what was most frustrating. My answer to that is scale: as I said above, the games are generally small, or large but unpolished/buggy. There's been recent interest in lobbying mainstream developers to add accessibility features to their games. Some audiogamers had luck convincing these developers to make small changes that make big accessibility differences. The recent Steam game Skullgirls is one such example. Other fighting (Street-Fighter-esque) games have had accessibility features added to them. And some other games (like Karateka on Steam) are accidentally accessible. The audiogames community finds it all. :) and they are willing to play through half-accessible or barely-accessible games in order to experience some scale, instead of sticking to the small audiogames released by individual developers.

Thanks,
Dan

[更多来自“Corey Dean”的内容](#)

Some email correspondence

The final concept we chose to go with is to design a video game which has the ability to bring people together and give enjoyment to anyone who plays games. We decided to design a maze game that can be played by both the blind and the sighted, allowing them work together and bridge the barrier between audio and visual based games.

Sound effects are big part of the game. Sound effects are used to help the blind player place themselves and their goals within the world spatially. The sounds overlap but when given an audio clue, the player can hone in on the correct sound and find it among all the noise. The sound effects play differently with respect to the distance and position of the objects with the player in order to direct the blind player through the game becoming louder or softer depending on the distance.

The game includes instructions printed in both English and braille.

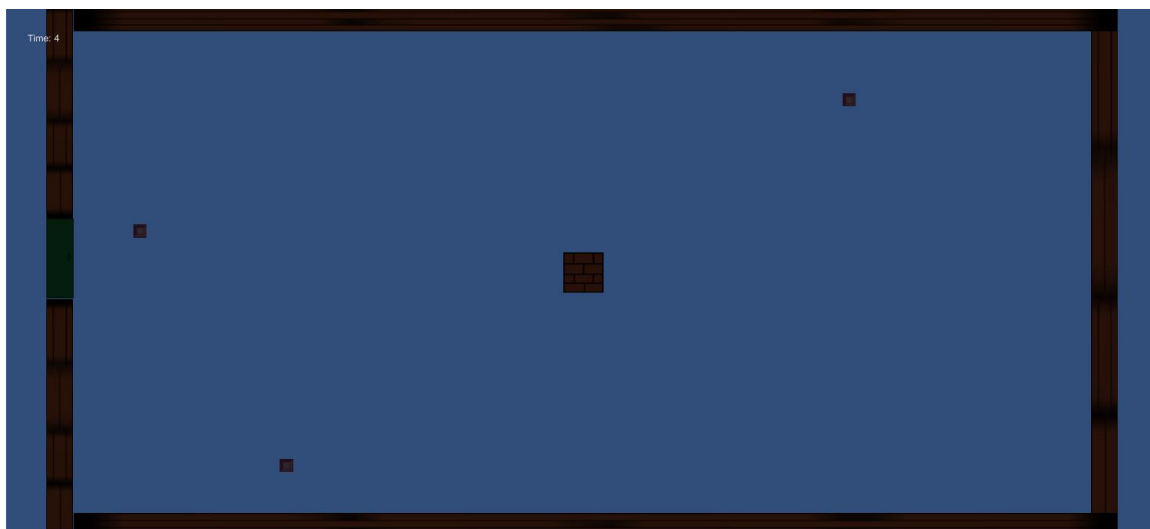


Instruction Manual

In the game, one blind player needs to play with one sighted player. They need to work together to solve the puzzle in a limited amount of time and meet each other to finish the game.

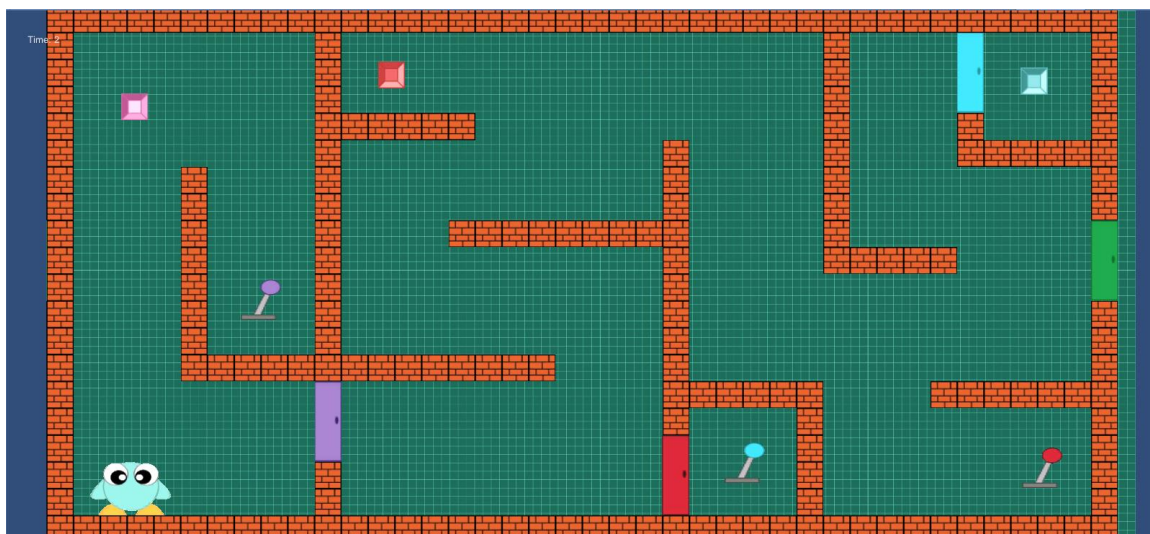
The game has two different “screens” designed for two players. The sighted player’s screen is the only visible one on screen, however the audio “screen” plays at the same time allowing both players to play at once.

On the audio side, blind users need to wear headphones and find 3 keys though a ‘sound’ maze by referring to the 3d sounds in the context. The player navigates the space through the use of the arrow keys. The key sounds move through space making the player need to follow them to catch them.



Audio screen for the blind

On the visual side, sighted players need to hit switches to open 3 doors and collect 3 crystals. Since the game is for two people, they currently play on the same computer (however this could be modified in the future). As such, the sighted player uses the WASD keys to move through the maze.



Visual screen for the sighted

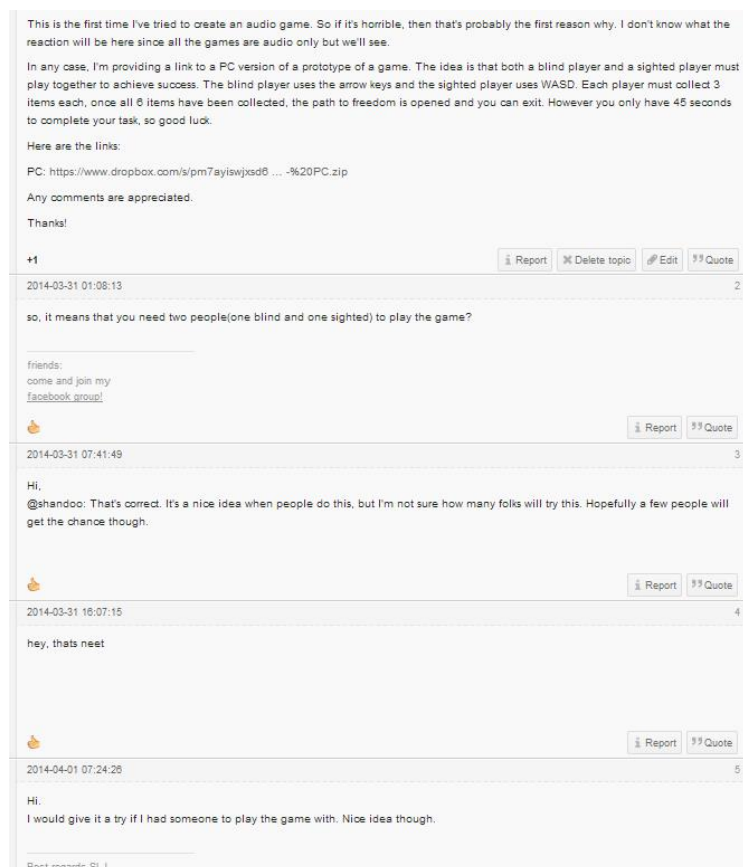
Once the game was complete we sent it out to be evaluated again. We've uploaded the game to audiogames.net and another copy to Steve and Daniel. By distributing it to the wide web both user feedback and playability are maximized.

IMPACT

The game itself is not perfect, but the process of making it was fun and challenging. We don't expect it reach a particularly big audience, but it does help bring awareness about the fact that visual and audio games are both mutually exclusive to the other. Hopefully this can be an example of a new way to create games.

As mentioned before audio games are not well known about. Everyone hears about the newest visual game such as Call of Duty or Battlefield but new audio game releases are never heard of outside of the audio game community. Audio games are not well done and a lot of developers don't seek to even understand how these games can work. Due to this audio games become as exclusive as visual games are. Our game offers the opportunity for both groups of gamers to game together in their own realm of understanding.

The project as a whole was harder than initially expected. As one would assume, we anticipated that we had already had all the answers to what we perceived was the problem instead of identifying what could be done to make it more inclusive. Ensuring that real change happens is hard to quantify in the end because we have no idea how many people have played the game or that it will impact developers and make them change their design practice. However, we have received some feedback and it has been positive so that is encouraging to say the least. This means that all our work was not in vain.



Some user feedback on *audiogames.net*

The fact that the game has been seen as a neat idea lets us know that we are not the only ones to see exclusion in games. This lets us know that the problem is real and that work needs to be done to include everyone when gaming, no matter what type of game is created.

The University of Toronto is offering an exhibition called the Accessibility Arcade. We had contacted them in the hopes of showing our game there for testing and user feedback however they unfortunately are opening the arcade in late April so this course was cut off to us. The good thing about this arcade is that it will bring more awareness to the inability of varying groups of people to participate in gaming to certain degrees.

If this project was started over again, we would do more research initially and find more from the target audience to help with creation and testing. Although we had Steve and Daniel to help us initially, as stated before, they are busy people and as such are a limited resource. If this was done again, we would upload games to public forums earlier on and ask for feedback and help in the creation of the game. Unfortunately, no process can ever be perfect but by doing these types of projects better work practices can be acquired and applied to future projects.

The main component about projects such as this is that testing them is near impossible without a blind person to help. We have tried a few audio games ourselves and there is no spatial awareness for us because we have no idea how to map a soundscape. Needless to say that if this project was done again this would be the primary concern and the first thing that needed to be acknowledged and dealt with.

SOURCES

Popular Mechanics, *"How to Make a Video Game for the Blind"*.

<http://www.popularmechanics.com/technology/gadgets/video-games/how-to-mak-a-video-game-for-the-blind-15277536>

AudioGames, <http://www.audiogames.net>