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10/9/20
Milestone one

Introduction

The paper explains three different projects and who the stakeholders and partners are in each project, what the unique engineering requirements are of each project, and the constraints that might affect the design of each project. There will also be an outline of the skills and resources that are needed to complete the projects, as well as, a rough timeline for developing each project. Two of the projects are specifically related to diversity, equity, and inclusions. While one project is related to collecting data and creating informative visualizations. The three projects are 1) Pathways to OSU Backbone Blockchain, 2) Antiracist Resource Screen, and 3) Animal Tracker: Processing and Visualizing Cattle Data on Rugged Landscapes.

Pathways to OSU Backbone Blockchain

a. Summary of project and stakeholders (5 - 10 sentences)

The project aims to incorporate blockchain technology to develop a “backbone” of information about some of the learning opportunities that exist for students coming from K - 12 settings going into secondary education and beyond that. The idea is to use blockchain technology to develop visible links that students and organizations can access. That way, we can make it clear to students as they progress through their academic journey what their options are across majors. There are a lot of stakeholders involved since the main goal of this project is to be inclusive of Black, Indigenous, people of color (BIPOC) students. BIPOC students are extremely underrepresented in the field of Computer Science which is why faculty leaders from around the university, like the Office of the Provost, Extension and Engagement, Office of Institutional Diversity, College of Science, Educational opportunities Program, College of Public Health and Human Services, Enrollment Management and Impact Studio will all be stakeholders in this project.

b. List or paragraph outlining the engineering requirements

The engineering requirements are to have knowledge of programming languages that can be used in Blockchain development. This includes but is not limited to C++, Java, JavaScript, and Python. People on the team will also be required to be able to communicate their ideas to the stakeholders and team members. Project management skills are expected of all team members due to the fast turnaround and overall goals of the project

c. List or paragraph outlining the constraints that might affect the design

There are many constraints that might affect the design of the overall project. One constraint will be the programming language that is used. While there are many programming languages that we can use since a lot of languages can be used to develop Blackchains it will be most ideal, I think, to use the programming language that everyone in the group is most comfortable with. However, stakeholders or project leaders may have a preference due to how they want the program to be designed. Another thing that might affect the design is stakeholders themselves. Stakeholders have requirements that we have to meet because they are responsible for knowing what works best for BIPOC communities that we are trying to be inclusive of. However, the best way to design for anyone is ask them how they want to be designed for.

d. Recommendation paragraph that includes

i. Key skills needed to complete the project

There are a couple of key skills that needed to complete this project. One of which is a solid foundation and knowledge base of the programming language that is going to be used. On top of that, basic understanding of what Blockchain are and how they are used is needed to complete this project. The most important skill, in my mind, is knowledge of inclusive design. If we are designing this software to make education more equitable and inclusive we need to know how to do that.

ii. General list of equipment or resources needed

There are many resources and pieces of equipment that will be needed to complete this project. For example, all people will need working computers and software that can run the IDE and programming language that the project will use. Access to stable WiFi will be more important than ever due to the online nature of the world right now. I'm not sure if there are specific equipment that will be needed since this is all on the software front.

iii. Rough timeline for development and what you'd recommend for each phase

Phase 1:

- week 3 of term: should focus on getting everyone up to speed on the important aspects of the project
- Week 4 of term: get and organize the data needed to implement the project
- Week 5 and 6 of term: how the project will be designed and the pros and cons of each design
- Week 7 of the term: what are the advantages and disadvantages of using blockchain
- Week 8 of the term: design what the solution would look like to show to stakeholder so we can get feedback on design
- Week 9 - 11 of the term: code the design to show basic iteration of project to stakeholders

Phase 2:

- 2 weeks: Adapt the design to fit the P2OSU application
- 3rd week: Figure out what data is missing and how to incorporate it into the block
- 4th week: start looking into the inclusiveness of the design and where the problems are
- Weeks 5 - 8: iterate on problems found
- Week 9: show to stakeholders and get feedback

- Week 10 - 11: run test data on program to see how the block interacts with the data

Phase 3:

- Weeks 1 - 4: streamline the block interaction
- Week 5: inclusiveness tests again
- Week 6 - 7: iterate on inclusiveness problems
- Week 8: show stakeholders
- Week 9: change what the stakeholders wanted
- Week 10 - 11: present project

Antiracist Resource Screen

e. Summary of project and stakeholders (5 - 10 sentences)

This project is about diversity, equity, and inclusion. Equity and inclusion are important because you have a diverse workplace but still have it not be inclusive. However, the project is about advocating for all learners to have a safe environment where they can learn and work. This project plans on doing this by creating a system that identifies and eliminates racist language in any file that way OSU can work towards becoming more inclusive. The output of the program would be clearly identified language that is racist and it would suggest further investigation into specific phrases to ensure that they are not discriminatory or offensive. The project itself does not list any stakeholders. However, since this is part of OSU software, OSU IT and administration would be involved in the creation of this as well as which of OSUs many websites it would be used on. Other stakeholders include OSU students and potential students. We would also need to include BIPOC and LGBTQ+ populations in order to understand the wide range of language that is offensive and exclusive. That way, we could work towards making OSU a more inclusive place.

f. List or paragraph outlining the engineering requirements

The engineering requirements are listed however, this would be a website that relies upon searching through other files. Therefore, the website would need to have a front end and back end so an understanding of HTML, CSS, JavaScript, and C++, python, or Java would need to be required. On top of this, the engineers would need to be able to design a system that can scan through files and design a system that allows any type of text file to be scanned. There are multiple ways to do this and they would need to decide on the best option.

g. List or paragraph outlining the constraints that might affect the design

Similar to the other project, there are many constraints that might affect the design of the overall project. One constraint will be the programming language that is used. While there are many programming languages that we can use since a lot of languages can be used to develop the front end and back end of a website. However, it will be most ideal, I think, to use the programming language that everyone in the group is most comfortable with or what is

demanded by the project partner. On top of this, being able to come up with a complete list of words or phrases that are defined as racist will be important. Also, figuring out how to detect subtle racist language will be challenging so the accuracy of the project will be a constraint since we will need to understand natural language processing.

h. Recommendation paragraph that includes

i. Key skills needed to complete the project

There are a couple of key skills that needed to complete this project. One of which is a solid foundation and knowledge base of the programming language that is going to be used. On top of that, basic understanding of how to develop the front end and back end of a website will be important. Also, an understanding of how to convert and read different types of files will be important. Like the last project, since this is designed to be inclusive, I think the most important skill is knowledge of inclusive design and inclusive language. If we are designing this software to make education more equitable and inclusive we need to know how to do that.

ii. General list of equipment or resources needed

There are many resources and pieces of equipment that will be needed to complete this project. Similar to the last project there is no hardware so all people will just need working computers and software that can run the IDE and programming language that the project will use. Access to stable WiFi will be more important than ever due to the online nature of the world right now. We will also need a list of words that we are looking to remove unless the plan is to use an AI.

iii. Rough timeline for development and what you'd recommend for each phase

Phase 1:

- week 3 of term: should focus on getting everyone up to speed on the important aspects of the project
- Week 4 of term: get organized and identify the type of language we are looking to remove
- Week 5 and 6 of term: discuss how the backend will be designed and the pros and cons of each design
 - How to read from any kind of file
- Week 7 of the term: what the front end will look like and how it will be designed
- Week 8 of the term: design what the solution would look like to show to stakeholder so we can get feedback on design
- Week 9 - 11 of the term: code the design to show a basic test of the project to stakeholders

Phase 2:

- 2 weeks: Adapt the design to fit the stakeholder requirements
- 3rd week: Figure out what words and language is missing and how to incorporate it into the search list
- 4th week: start looking into the inclusiveness of the design and where the problems are
- Weeks 5 - 8: iterate on problems found

- Week 9: show to stakeholders and get feedback
- Week 10 - 11: run test trials on program to see how the website with the data

Phase 3:

- Weeks 1 - 4: streamline the search process
- Week 5: inclusiveness tests again
- Week 6 - 7: iterate on inclusiveness problems
- Week 8: show stakeholders
- Week 9: change what the stakeholders wanted
- Week 10 - 11: present project

Animal Tracker: Processing and Visualizing Cattle Data on Rugged Landscapes

i. Summary of project and stakeholders (5 - 10 sentences)

Sustainable agriculture is more important than ever and we need to keep track of the cows that roam public and private lands. The problem is that we do not know where Cattle graze when they decide to go to Southeastern Oregon because that part of Oregon is a desert! Currently, we have 30 cow collars that have GPS devices from these collars we have over 150000 data points and are tracking more than 35 cows. The goal is use the CRAN package to create a visualization of the cows. The stakeholders would be the owner of the cows, the owners of the private land that the cows graze on, the OSU agricultural department, and managers of the cows.

j. List or paragraph outlining the engineering requirements

The engineering requirements are that the group must be able to use the CRAN package that will be used to create and process the visualization. The group must be able to create a visualization and understand key components of visualization. The group must also have to be able to collect the data from the cows, organize it and understand it. Lastly, the group must also be able to use git since there is already a GitHub repository for the project with a prior code base.

k. List or paragraph outlining the constraints that might affect the design

The biggest constraint that might affect the design of this project is the package that has to be used. The CRAN package has the cow tracking data on it. It used animal behavior to identify and remove the bad data points. The package is nifty but it is a constraint because we do not know how well it can create a visualization or how easy it is to take the data from CRAN and create a visualization. The other constraint that could affect the design is the pre existing code base. It would probably be more trouble to scrap it all and start over. However, the people who worked on this before might already have a basic design implemented.

l. Recommendation paragraph that includes

i. Key skills needed to complete the project

There are a couple of key skills that needed to complete this project. One of which is a solid foundation and knowledge base of the programming language that is going to be used in the CRAN package. On top of that, basic understanding of how the CRAN package works and how it interacts with the Amazon Web Services will be important to completing the project. Also, an understanding of how to convert the data in a visualization. Realistically, we will need a couple of visualizations so an understanding in data and statistics will be important.

General list of equipment or resources needed

There are many resources and pieces of equipment that will be needed to complete this project. Similar to the last project there is no hardware so all people will just need working computers and software that can run the IDE and programming language that the project will use. Access to stable WiFi will be more important than ever due to the online nature of the world right now. We will also need access to software that will allow us to create state of the art visualizations.

ii. Rough timeline for development and what you'd recommend for each phase

Phase 1:

- week 3 of term: should focus on getting everyone up to speed on the important aspects of the project i.e how CRAN works
- Week 4 of term: get organized and understand the cow data. Identify some different trends that we see in the data
- Week 5 and 6 of term: discuss what the data could mean and start thinning about what type of statistical test we want to run
- Week 7 of the term: put cow data on the git repo
- Week 8 of the term: decide what software we want the visualisation to be on
- Week 9 - 11 of the term: get ready and show the data to the stakeholders

Phase 2:

- 2 weeks: change the type of data we are looking for or what our ideas are to fit the stakeholder requirements
- 3 - 4 week: Figure out what exactly what kind of data is important (run tests to look for significance)
- Weeks 5 - 8: iterate on what the data we are getting
- Week 9: show to stakeholders and get feedback
- Week 10 - 11: start talking about the visualization and the designs

Phase 3:

- Weeks 1 - 4: produce different designs of the visualizations and talk about pros and cons
- Week 5: show to stakeholders to get their feedback on which would be best

- Week 6 - 9: create the visualizations to meet all the demands
- Week 10: show stakeholders one last time
- Week 10 - 11: present project