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**ESSAY**

The vision for our senior design project is to make a personal automated note taking application. The end goal of this project is to be able to take a pre transcribed video lecture and using an AI feature that we will develop, return notes and summary sheet for the end user. For this project, we will make use of several python libraries including but not limited to PyTorch, TorchAudio, and Selenium. However, throughout the course of the project we do anticipate several roadblocks including legal permissions. But it has benefits as well, such as increasing accessibility to lectures, and use in loud environments.

We hope to be able to introduce this project to future employers as a major milestone in our lives. Having this project be a large and unique idea for the area of machine learning and support tools in general. This project will show the knowledge that we have gained through our classes and through personal research. However, there will be some legal issues involved. The main one being that we need to get permission from any sources that we use. Since we plan on using Khan academy videos for our main audio source, we will need to contact them in order to get permission to use said videos for this explicit purpose.

Aside from the potential legal roadblocks, we anticipate multiple benefits of this project. One of the main benefits we see to this project is that it provides easy access to lecture content to those with a disability, such as those with a hearing or reading disability. However, for those without a disability it will still provide a clean and easy way for students, teachers, and others to review the lectures without having to listen to or transcribe the notes themselves. Doing this will make classes, especially online classes, more accessible to everyone.

One thing we will need to consider when getting samples is the kinds of environments that the speaker, which we will also need to identify, is in. For example, a professor may have bad audio quality due to having the microphone too far away, or just having an outdated microphone in general. Additionally, the speaker may be in a loud classroom due to ambient noise or students talking over them. All these cases we will need to consider when training the model. Additionally, we may want to consider other languages when we run through the transcriptions. However, for this we may use a third-party translator.

With the benefits and roadblocks in mind, we anticipate still being able to create a personal automated note-taker. Despite the potential roadblocks, we will contact the creators of the lecture videos to seek permission to use their material in our project. We will also train our model to help combat noise pollution in the user's environment. Completing this project will create more accessible lecture material for those with a disability. Additionally, it will create another way to go back and review lecture content. With our personal automated note-taking application, users of every kind will be able to benefit.

**Scratch work:**

In your final Fall presentation you will be asked to discuss the major constraints on your project design. **To this end, your group should write down ideas that address 3-4 topical areas that may constrain the possible solutions for your project.** Here are some possible constraint topical areas that apply to your project.

Professional: does your project have a direct or indirect impact on your professional development or public reputation? Does your project need and apply specialized expertise?

**When completed, this would be a major project listed in our portfolios that we would be able to discuss with future employers and colleagues. This project does require specialized expertise within machine learning, but we are taking relevant coursework and have found the needed resources regarding the tools we will be utilizing.**

1. Ethical: does your project have a direct or indirect moral impact on someone? If so, what concerns or precautions are being considered to insure that this impact is positive (or neutral) and not negative?

**We may need permission to use training material, and we also may need permission from professors to transcribe their media / use it for further research purposes. Data collection...**

1. Legal: Are there legal issues or constraints associated with your project? For example, will you be using intellectual property that may be in dispute?

**May need permission from lecturer to transcribe and use their material**

1. Social: will your project be used for public service? Will it be used by a non-profit agency? Does it have some benefit for society? Does it enhance people’s lives or quality of life in some way?

**Provides benefits to anyone who either needs transcription due to a disability and also provides a convenient way for everyone to search and review lecture topics. The primary benefit this provides for society is that it makes classrooms more accessible without the need for someone else to enter the classroom**

1. Environmental: are there limitations about where and how the project will be used or deployed? Are there concerns about environmental impacts such as pollution or other potentially harmful side effects? Will the project impact environmental conditions? Will the project reduce environmental impact of currently existing solutions?

**It may be difficult to utilize this software in places where many people are talking, identifying speakers may be a concern. The project should not impact environmental conditions and should instead be designed to work around the environment it is situated in. There are no concerns regarding pollution or harmful side-effects. It will not significantly improve environmental conditions or reduce the environmental impact of currently existing solutions. The most beneficial impact it may have to**

1. Diversity and Cultural: Are there any cultural constraints, such as language, lifestyle, or local customs that will impact your solution? How does promoting diversity and diverse use play a role in the design of your project?

**Other languages will be outside of the scope of this project. We may be able to translate recorded audio using a 3rd party tool, and the resulting text COULD be summarized and presented without much difficulty. This project is more so about convenience and accessibility rather than diversity and diverse use at the time being.**

**Essay Outline**

* Introduce project
  + Project purpose/goal statement
  + End goal
  + Technologies used
  + Possible roadblocks and benefits
* Professional/Legal/Ethical
  + Project able to discuss with future employers
  + Specialized knowledge about AI/machine learning – taking courses
  + Permission to use lecture materials.

Paragraph 3

* + Social
    - Provides easy access to lecture content to those with a disability
    - Easy way to review lecture material
    - Makes classrooms more accessible

Paragraph 4

* + Environmental/Diversity
    - Loud environments
    - identifying speakers could be an issue
    - Possibly able to translate to multiple languages using 3rd party tool

Paragraph 5

* + Conclusion
    - Restate project goal/statement
    - Overview of project roadblocks and benefits