Linear Algebra Project

Description

This project is intended to be a critical investigation of the application of linear algebra to a topic of your choice. You are tasked with the responsibility of identifying something that linear algebra can be used for, developing an understanding of that application, and writing a typed exposition of the application in two forms:

1) A complete report detailing the application, how, and why linear algebra is used. This can be as long or short as it needs to be, but the expectation is that most applications will take between 4 and 6 pages to properly write up.

2) A stand-alone executive summary that gives an overview of the project. This should not longer than 250 words.

Methodology

You may work in groups or individually. If you choose to work in a group, note that a higher quality and more in depth investigation is expected. You should address the following questions:

1. What is your application? Describe it in enough detail that a rising sophomore can follow it.
2. Why does your application matter to the world? What would be difficult without it?
3. What tools from linear algebra does it employ?
4. What is the problem that linear algebra is solving?
    a. Write a short story about a hypothetical person or entity that illustrates the application and its solution.
5. How does linear algebra solve the problem?

Topics

The topic can be any application of linear algebra. This may be an application to a specific real world problem, an application to a general type of problem, or an application to something in mathematics not covered in linear algebra. Topics must be approved by the instructor. See the accompanying incomplete list of possible topics.

Resources

You may use any and all resources available to you. The scope and quality of your reference sources matters, see the grading rubric for more information.

Evaluation

This project is worth 5% of your course grade and will be evaluated using the rubrics on Blackboard.

Proposal

A proposal is due on October 20th with the final report due on December 3rd. The proposal should be not more than 500 words and address the following:

1. A brief big-picture description of the application.
2. What aspects of linear algebra you expect to use.
3. What sources you'll be able to use to learn about it.
4. Who is in your group, and how you plan to work collaboratively on the project. (if applicable)