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**Project preparation**

**EEG Data**

1. The most interesting part about this project would be to identify the types of brainwaves associated to recognition. It would be really interesting to explore the different kinds of brainwaves emitted as a result of different kinds of recognition and also its relationship to memory.
2. I would hope to dive further into classification algorithms when tackling this project. I believe that would be the most appropriate design when dealing with recognition. Certain patterns of brainwaves may be classified by certain types of images or patterns which would be interesting to explore.
3. Some techniques that could be used for the classification algorithm in this case could be constructing a neural network, using a Bayes classifier or using nearest neighbors algorithm
4. The most challenging part of this project would probably be figuring out a way to run the algorithm through the massive dataset in an efficient manner. Since the dataset will be very large, run-time of the algorithm would have to be carefully considered.

**Financial Data**

1. The most interesting part of this project would be building out the various possible simulations for the stock market and determining its accuracy to the real market. Coming up with many simulations based on recorded past data will be the most interesting part since we would have the freedom to simulate best or worst case scenarios.
2. Some interesting machine learning that I’d hope to more learn about during this project is learning how to implement regression algorithm on a much more intimate level. Regression would be the most appropriate since we are dealing exclusively with a lot of numerical data. I would want to learn how to manipulate variables and how it affects the overall outcome, in this case, the result of the simulation.
3. Some techniques of regression we might be able to use is logistic regression to determine certain probabilities of either positive or negative fluctuations. Polynomial regression might also be helpful as well as stepwise regression if we are dealing with multiple variables possibly affecting the outcome.
4. The most challenging part of this project would probably be implementing the algorithm itself since it could potentially have a lot of abstraction and logic behind it. There will probably be many variables in play which will probably increase the complexity of the algorithm and runtime could also become a challenge if we are using a large dataset as our learning set.

**Hallucinating Purple Rain**

1. The most interesting part about this project would probably be parsing through the data and figuring out how the different satellite images are indicative of certain weather and their connection to radar data. Figuring out certain patterns or shapes in the images to indicate rain or snowy conditions just for the purpose of understanding how these images are composed would be an interesting objective.
2. I would hope to learn a lot about deep neural networks from this project since that is what this project seems to be all about. This project seems like to would heavily be based around neural nets for all the image processing which would eventually result in simulation or prediction of certain weather conditions as the output so many of the concepts in neural networks would probably have to be implemented for this.
3. Convolutional neural networks and possibly even classification would be viable techniques for image processing since we would ultimately be trying to look for certain patterns or features in images indicative to certain kinds of weather.
4. The most challenging part of this project would probably be implementing the neural network. It would probably have a lot of layers and require the data to be filtered in a lot of ways since the images are able to tell a lot more than just weather. Moreover, the simulation and prediction part of it will be challenging.

**Order of Preference:**

1. **Financial Data**
2. **EEG Data**
3. **Hallucinating Purple Rain**