DLAIR CS 6953

A1

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Project Ranking (from most desired to least desired):

1. Deep Learning for Estimating Lane Line Quality Using Retroreflectometer Ground Truth
2. Reinforcement Learning for Road Sign Detection and False Positive Elimination
3. Deep Learning-Driven 3D Reconstruction, Data Synthesis, and Size Estimation for Road Signs

I would like to work on *Deep Learning for Estimating Lane Line Quality Using Retroreflectometer Ground Truth* because I am excited about the possibility of designing and conducting some great experiments to gather retroreflectomoter data. I also think that this project will be challenging, as I'm not aware of any extant models that we can use to simply fine-tune.

I believe that I am well qualified for this project, as I have successfully led the design and execution of experiments regarding fighter jet systems performance in the past. I also have experience designing and training deep learning models using CNNs to work with images.

I would start by gathering data consisting of imagery of lane lines (probably from a dash cam, I suppose) and accompanying retroreflectomoter data. I would then begin by carefully dividing the data into a train, validate, test split and training the simplest model that I think could successfully handle the task, and evaluating it using the validate data. If I felt the performance could be improved by adjusting the model architecture, I would do so. I would iterate on this process until I felt that there were no more gains to be made, and I would test all of the models against the test dataset. I would then select a final model and do my best to package it in an appealing way for the end user (Blyncsy).