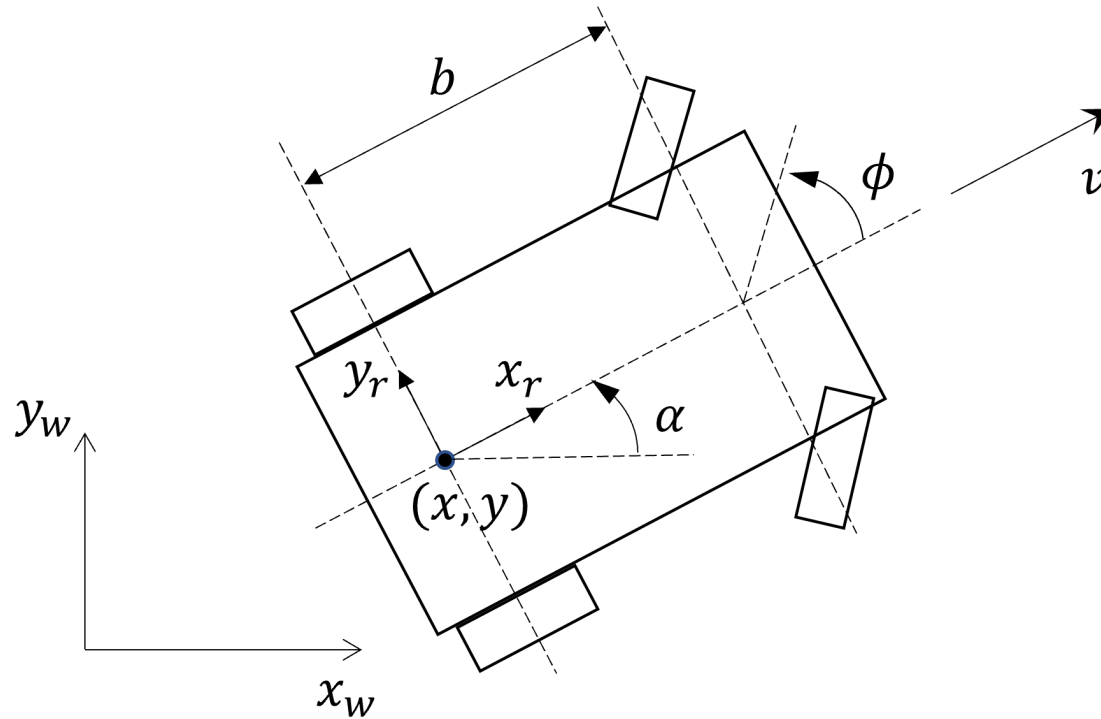


Final Project

ENPM 808A

Car Like Robot



$$\dot{x} = v \cos \alpha$$

$$\dot{y} = v \sin \alpha$$

$$\dot{\alpha} = \frac{v}{b} \tan \phi.$$

The control inputs to this model is $u = [v, \omega]$, where $\omega \triangleq \dot{\alpha}$ is the rotational speed of the robot. These can be transformed to the command actions (v, ϕ) , where v is the translational speed and ϕ is the steering angle obtained by $\phi = \tan^{-1}(\omega b / v)$.

Instructions

- Training Data with instructions on format of data (see readme file) are available at
- <https://drive.google.com/drive/folders/1lgiPMaMyktjla9qH-5qqSjwFuew9TiPW?usp=sharing>
- Test data is available at
- <https://drive.google.com/drive/folders/1lhVbX1VwAQf4WzamN8m81sNQTABDWw5y?usp=sharing>

Deliverables (Due December 16, 11:59 pm)

- Final Report (Online Submission) (pdf)
- Prediction Model and Evaluation. The rationale for choosing a given model should be provided and discussed in detail. What steps were taken in the learning process for the model selection? How was regularization done? What was validation used for? Please provide detailed discussion. Learning Curve, Validation Curves should be provided. The process for selection of various hyperparameters should be detailed.
- Estimate for the out of sample error from the test data.
- Code used for generating the predictor.
- Final Presentation (6-10 slides) should summarize these findings. (pdf)