Case Study #3
Self-Driving Cars

At a high level…

Is the research you are proposing possible? Is it practical?

Does it answer the research question? Some part of it?

Is your methodology sound?

Is the work likely to be achievable in 5 years?

Literature Synthesis & Key Insights

- Any literature that describes autonomous vehicles and the challenges with them
  - Particularly with respect to keeping operators engaged or enabling them to quickly re-engage with the automated tasks
- Any literature that speaks to the methods needed for this research question – which ones are appropriate and which ones are not.
  - Along with this should be some mention of the metrics that you intend to use.
- A list of 2-3 challenges with the research question
  - Difficulty finding a causal link between functionality or driver-station layout to accidents given incredibly low number of accidents
  - Challenge in answering the question due to wide variation in driver skill & training – these aren't military pilots or astronauts…
  - Difficulty testing using human-in-the-loop because of difficulty engineering situations in which the vehicle might require the driver's assistance

Technical Approach & Evaluation

- Need a good discussion on specific analysis methods using existing data
  - What metrics are important?
- Need a good discussion on specific methods to collect additional data
  - Include a discussion of target population
  - Include a discussion of how the tasks will be conducted
  - Include a discussion of the methods
  - Human-in-the-loop with real cars will likely have limited utility. If this method is being proposed, it needs to be very well justified.
- For both of the above, what type of statistical analysis is being done?
  - Look for appropriateness based on the data type and particularly quantity. For the analysis of existing data, looking for statistics which can be good for large data sets. The additional data collection will likely collect far less data.
- The proposal was for 5 years, does it have a logical progression?

Upcoming Schedule

Nov 22nd – No class, Sam is available during this time to advise on projects*

Nov 24th – No class, Thanksgiving

Nov 29th – No class, Sam is available during this time to advise on projects*

Dec 1st – Final Project Presentations
Dec 5th – Final Project Presentations

* Sam's desk is on the 2nd floor of CCB, email her or just show up.

Presentation Schedule (will also send by email)

December 1st

- Andrew Silva
- Katelyn Fry, Jennifer Molnar & Waiman Meinhold
- Fereshteh Shahmiri & Phan Anh Nguyen
- Zackory Erickson & Henry Clever
- David Kent
- Obioma Anomnachi
- Jonathan Camargo-Leyva
- Yury Park & Donghai Liu
- Angel Daruna
- Varun Agrawal & Shani Sharif

December 5th

- Ashwin Kachhara & Vinayak Soni
- Jonathan Balloch
- Sajid Anwar
- Sanjana Vijayakumar
- Matthew Barulic
- Asif Rana
- Siddhartha Banerjee
- Stephen Eick
- Jin Xu & Wengling Chen
- Amit Raj & Phani Teja
- Carl Saldanha & Stephen Camp
- Samuel Cheng

Presentations

- 5 minute presentations + 1.5 minutes of questions
- We will use my laptop for showing presentations to streamline this process. **Send all slides/videos to me** at least 4 hours before the presentation time (powerpoint or PDF format)
- Presentation time will be strictly enforced to make sure everyone has a chance to present. Any live demos should be part of the presentation time.
- Each group will also submit a brief written report describing the work. Videos are strongly encouraged. Submission of all written and presentation materials are due on T-Square by **7pm on Tuesday December 6th**.