ECE 322

Assignment 1

Arun Woosaree
September 14, 2019

Arun Woosaree XXXXXXX

1

After reading the two papers, the two most essential factors which make software testing difficult in my opinion is:

1. human nature
2. the always changing nature of software

2

- Functionality
  - Does the software allow the vehicle to work autonomously, without human input?
  - Does it do so in an acceptable manner?
  - (i.e. does it reach the destination in about the same amount of time as a good human driver would do or better?
  - does it do it as safe as, or better than a good human driver?)
- Performance and reliability
  - How reliably does the software react to its environment?
  - Does the software still control the vehicle in an acceptable manner in more difficult situations?
  - If certain conditions like heavier traffic puts a higher load on the processing unit for the system, does the softare still behave reliably?
  - It should work in different driving conditions (e.g. highways vs in-city, sunny vs slippery roads)
  - Will the software perform just as reliably a few years from now?
- Efficiency
  - Does the software utilize its resources efficiently?
  - Does the software respond quickly enough to its environment?
  - Maintainability
  - Is the software well-documented?
  - How easy is it to add functionality to the software? (e.g. if new driving laws have to be followed, how easy will it be to add a patch to be in compliance)
  - How much technical debt exists in the software project
  - When faults are found, how easy is it to fix them?

check if this is the right word

- Usability
  - From the user's perspective, how easy is it to use the autonomous mode of the vehicle, and how is the user experience?
  - Also, how easy it is to switch between autonomous and manual modes of the vehicle?
- Portability
  - Can the software be used in multiple types of vehicles?
  - (e.g. if there are multiple models of cars, can the same software be used with all of them?)

Risk Category	Technical Risk	Business Risk
Risk 1		
Risk 2		
Risk 3		

3

1. Reliability
2. Correctness
3. Usability
4. Efficiency

4

Feature Description

Boeing 737 MAX flight control system

Nature of Software Failure

Any testing efforts regarding the failure?

apparently it was "only" classified as a "major failure," meaning that it could cause physical distress to people on the plane, but not death. **gates˙2019**

Any follow up action taken? Any plan to alleviate further problems?

5 todo, read these articles

- https://spectrum.ieee.org/aerospace/aviation/how-the-boeing-737-max-disaster-looks-to-a-software-developer
- https://www.bloomberg.com/news/articles/2019-06-28/boeing-s-737-max-software-outsourced-to-9-an-hour-engineers
- https://www.bloomberg.com/news/articles/2019-07-27/latest-737-max-fault-that-alarmed-test-pilots-rooted-in-software
- https://www.google.com/search?q=boeing+737+max+software+testingoq=boeing+737+max+software
  8
- https://www.businessinsider.com/boeing-knew-737-max-software-error-year-before-telling-faa-2019-5
- https://www.cnn.com/2019/06/26/politics/boeing-737-max-flaw/index.html
- https://www.theverge.com/2019/5/2/18518176/boeing-737-max-crash-problems-human-error-mcas-faa