REACTION PAPER

“Fall in love with the problem and not the solution”- This is my major takeaway from the presentation. The talk was organized in such a way that the speaker first mentioned the problem and then the solution to the problem. This gives a clear picture of how research is supposed to progress. The need for research should stem from a problem was the highlight of the talk. This was highlighted by the speaker by picking examples from real life. The speaker mentions that it was when his wife was pregnant and had to deal with heart issues that he concentrated on semi-autonomous robots for surgery. Also, the traffic pattern change he observed when in Zurich and Milan helped him model his self-driving cars better. It is not only that the problems were taken from real life examples, but the solution was also show integrated with society. The Locoman was shown integrated into society like in daycare and picking up objects below a crib. The separation between the ‘hammer’ and the ‘nail’ was also quite interesting. The ‘hammer’ basket can have Robotics, AI which the speaker discussed in detail without losing track of the goal itself. The goal is still the ‘nail’ which included navigating through bad traffic, expensive housing, care for the elderly, aid to the doctors to navigate through health crisis. The speaker seals the deal when he mentions that building Humanoid Robots should not be the ‘end goal’ which might stop at flipping burgers but rather use them to save precious lives. This approach was held on the speaker through out the talk which was quite inspiring.

The speakers research methodology indicated the overlap of different fields. The speakers research on ECG-robustness indicated of lack of cybersecurity defense. It also indicated of the skewed nature of ECG data with respect to gender. The deployment of Locoman in landslide related areas also indicate the need to incorporate the study of environmental factors. The need for sustainable living was rightly indicated by the display of the age graph. This gives a greater dimension to the research in future too. Social justice window can be expanded to include class divide, income divide, region specific divides etc. The data imbalance where there are lesser data of extreme cases Eg- ECG data for abnormal hearts could also be extrapolated to income divide. The lower income class data could also be considered while developing algorithms. The lower income might affect nutrition which might affect the heart health in ways to ponder.

The first graph which indicated the need for the development of some new tools and technology which was rightly derived from the rising life-expectancy is among the various things used by the speaker to connect to the audience. It is the problem which everyone needs to deal with, thus connecting to a wider set of audience. Use of animations to show the training algorithm, short clips of Locoman climbing the stairs gives right picture of what is it being trained to do as well as the outcome. Instead of explaining the drop test with a set of equations for stability, the speaker rightly shows the video demo and highlights the part where the Locoman gains balance once it is dropped on the ground. The deployment picture of Locoman in the field such as collecting data from an area prone to landslides captures the seriousness of the situation which can essentially save lots of lives. Also, the societal acceptance and integration of the new technology is important which was acknowledged by the speaker. The photos of Locoman deployed to learn from the care-giving workers, picking up toys in a daycare, picking up objects under a crib also projects a picture for the audience that, it might be the case in near future and not something which is still in the lab. The integration of academia, industry and the government is highlighted by the speaker which further engages with the wider group of the audience. The companies associated with the work with almost every project such as BOSCH, Microsoft is indicated by the speaker. The speaker also mentions the “Executive order on safe secure and

trustworthy development and use of AI" which indicates the interest of the government and funding opportunities in near future would definitely be interest to the budding researchers. The speaker talks about the two courses with the Safe AI labs, Trustworthy AI and AI for humanities which would definitely spike the interest of the audience to check it out.

The speaker also gave away some of the field which can be worked on such as the medical field. This has already been picked up by startups which provided data of images using GenAI to the hospitals to further improve the algorithm to detect COVID. The vision of the speaker was to deploy Intelligent Autonomous Systems such as self-driving cars, assistant robots, robots in farming which are some of the burning research issues. This indicates the significance of the research of the speaker. Data extrapolation was one of the topics discussed during the talk. Different LLMs perform with different efficiency. Combination of these LLMs to produce the right data could be the future.

In the current scenario, in every society it is the healthcare and affordable housing which is the need of the hour. The speaker spoke about making the work easy for the doctors such as having an autonomous robot perform aided surgeries, I think there is a need to think about it from the patient perspective as well. Not just care for the aged, but care for every age. Affordable healthcare is the necessity in every society. The lifespan is predicted to be about 100 years which necessitates the need for doctors even more. AI-Doctors which are affordable and present when in need would help reduce the cost of healthcare and make the healthcare industry equitable. Seeing a specialist is about 600$/hr would be significantly reduced to a about a few dollars/hr. You present it with a set of problem and the AI-Doctor is supposed to provide a set of tests or prescribe a medication. The test data could be used to train the Doctor further to be able to diagnose a disease faster and accurately in the future. Specialized LLMs are already in place in different fields such as AI assistants. This would be further specialized to deal with human health. As mentioned by the speaker mass production of Intelligent Autonomous Systems will significantly reduce the cost. It would involve a combination of different fields such as Robotics, AI, Medicine etc.