

Research Proposal: Is Technological Singularity Possible?

Introduction

Artificial Intelligence is an area of growing interest and research. Humans are currently integrating AI into various areas of industry, which include finance, biology, and marketing. With AI advancing at its current pace, many posit the possibility of inventing AGI – Artificial General Intelligence – that can mimic human cognition. Some go even further by posing the possibility of ASI, Artificial Super Intelligence – machines whose cognition far surpasses that possessed by humans. The enveloping concept is called technological singularity, the idea that the onset of machine intelligence mimicking humanlike cognition may spur the development of superhuman intelligence within these machines. This research proposal provides an impetus to gauge the scientific consensus on the feasibility of technological singularity. It explains the significance of the dilemma and delineates the appropriate methods to gauge its feasibility. The research is mainly targeting researchers and companies.

Background

We have analyzed commentary from five different sources that offer differing opinions on the feasibility of technological singularity. Gurkaynak et al. and Tyagi offer concurring opinions in favor of the development of ASI. Both authors use current examples of advancement in AI to provide an optimistic outlook on singularity. Gurkaynak et al. use rapid technological progress under Moore's Law as an indication that technological singularity will be feasible soon. Tyagi solaces readers by pointing to current AI libraries that offer a small glimpse into a future involving singularity. On the other hand, Dubashi et al. offer an opposing view on the prospects of singularity. According to them, increased processing speed dictated by Moore's Law does not

guarantee the development of sophisticated AI that could mimic human cognition in the coming years. Walsh and Makridakis offer mixed opinions on the development of ASI. While open source technology certainly opens the door to many different contributions to the field, which may culminate in a breakthrough, and the option to “hardcode” humanlike intelligence into machines is an option, there are some roadblocks. The highest form of human cognition, creativity, may be nigh impossible to imprint into some algorithm because of its highly spontaneous nature. Furthermore, any progress toward singularity may be limited due simply to the limits of human ingenuity.

The literature offers little consensus on the question of the feasibility of singularity. In lieu of this, this paper offers a final answer to the question of whether singularity is possible. Firstly, a survey will be conducted asking prominent researchers of current progress toward singularity and whether it is currently feasible. Secondly, we look to provide some mathematical foundation for the existence of singularity. All algorithms have mathematical underpinnings that highlight their function. If singularity is indeed feasible, then it should be possible to create a mathematical model for it. This would save researchers time and investors’ money, where if not feasible, they can spend their time and money in progressing in other areas. Furthermore, the research, unlike past papers on the subject, will not focus solely on the opinions of experts. The mathematical research being conducted adds an objectivity that the aforementioned sources lacked.

Procedure

The procedure will be divided into two approaches. The first approach involves surveying a plethora of prominent AI researchers and computer scientists on a national scale. The goal of the survey is to gauge current progress in AI research and get experts’ opinions on

whether singularity is possible. Furthermore, the survey will also ask experts to provide the amount of time they believe it will take to achieve singularity, if at all. The surveys will be sent to various institutions across the United States, such as universities, industries, and thinktanks.

Some prominent academic institutions that we plan on sending these surveys to include:

Carnegie Mellon University, all Ivy League universities, and Stony Brook University. Some of the more prominent industries we plan to contact with this survey includes: IBM, Google, and Tesla. Once we have received all (or most) responses, we will aggregate the answers to every question to create a more vivid and wholesome scientific outlook on the singularity dilemma.

One setback with this approach is the possibility that we may not receive timely responses from all recipients. If enough recipients do not respond, it could render this approach null and void.

The second approach involves researching some of the mathematical underpinnings of AGI and possibly procuring an algorithm to model AGI. We will use all sources at our disposal and will employ the help of various academic institutions. The goal is to provide concrete mathematical evidence for or against the inception of singularity. If a valid algorithm is conceived, then it suggests that singularity is indeed feasible and that time and money is worth expending on future research in AGI. Otherwise, it is indicative of a futile venture. Therefore, the second approach serves a dual purpose. One is to provide a theoretical foundation for singularity, if it exists, and another is to provide a baseline to start developing the technology itself, assuming there is some mathematical foundation. We are, however, limited in overall resources and personnel and because of this, it is not guaranteed that we will find a suitable algorithm, even if there is one.

Conclusion

Overall this research paper will provide a concrete answer as to what the consensus in the scientific community is regarding singularity. We believe it is important to gauge this because it will provide some revelation on whether resources should be allocated for research in this area. Unlike previous commentary, this paper broadens the scope of people being consulted. Unlike previous research, we are potentially providing. Furthermore, if we find that singularity is indeed feasible and procure an algorithm, then it provides a foundation for further research in the area. Overall, this paper looks to provide concrete answers to the dilemma of singularity and possible baselines for the future.