Drive Down Economic Inequality

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why is exciting? what is the universal appeal?

Given our chance to do something grand, why focus on solving games, describing action, or writing fiction when we can really use this opportunity to solve the world's problems, create a movement, and write a new chapter in the human condition?

President Obama recently wrote that [1] "there's no shortage of challenges ahead: Climate change. Economic inequality. Cybersecurity. Terrorism and gun violence. Cancer, Alzheimer's, and antibiotic-resistant superbugs" and that artificial intelligence (AI) is a way to make dents against these challenges. However, he also warned that AI [2] "could increase inequality. It could suppress wages."

The role of AI in economic inequality could go either way. Let's ensure that AI drives down inequalities rather than increasing them wildly.

How? As well-described in [3], the biggest cause of economic inequality is the lack of access to important networks that empower people. Even the best of us cannot hope to accomplish much without connections to education networks, finance networks, information networks, infrastructure networks, social networks, and cultural networks.

The networks often exist, but people need guidance.

I feel somewhat knowledgeable and have even worked on a client project with a health insurance company, but in choosing a health insurance plan a couple weeks ago, I was lost. Now imagine how a person from an underprivileged community must feel. Luckily, I had access to a "Choose Better Statement from IBM Watson Health Analytics" that allowed me to choose a plan that will likely save me thousands of dollars over other options.

Choosing the best vocational training or retraining, getting all of the tax breaks you're entitled to, knowing that you can bargain for loans, connecting to the acquaintance of an acquaintance that gives you an opportunity, receiving a free car seat, learning proper office etiquette, navigating higher education, … The list is almost endless.

what the project trying to achieve (time horizon 3-5 years)?

There are not enough experts to advise all of the people in need along all of these different dimensions, but AI technologies are ripe for providing this sort of personalized guidance in an inexpensive and scalable way. We will develop a cognitive app that empowers people to be successful by connecting them with all of the right networks for them.

what is the one sentence criterion for a binary decision (we did it or we failed)?

To be a success, the app will guide at least 100,000 people in need and collectively provide them $100,000,000 per year lift via empathetic, fair, and transparent advice.

who else is working on this problem? why can't we do it today? why is it hard? how would it advance the state of the art?

To the best of our knowledge, NGOs like Single Stop USA and the Food Bank for New York City's Tiered Engagement Network are attempting to address this problem with human advisors, but comprehensive AI-based solutions have not been considered by anyone. (The LinkedIn Economic Graph Challenge has a different scope and aim.) Beyond basic challenges like obtaining appropriate training data, there are many components of such a solution that would push the state of the art in AI. Understanding the full 360° situation of a person in need and then reasoning about all of the different ways they can connect into networks to receive the best interventions is beyond the current state of the art, exacerbated by the fact that some are nebulous cultural recommendations, others are social networking related, others are quantitatively-oriented recommendations (such as tax advice), and still others are qualitative recommendations.

In order to be effective, such a system would need empathy, fairness, and transparency beyond its core functionality. Affective computing is in its early stages, algorithmic discrimination is being noted in more and more extant AI systems, and advanced AI is typically a black-box. Introducing all of these characteristics into an AI system is already

beyond the state of the art and putting them into an AI system with capabilities that do not yet exist is even more challenging.

why should it be achievable? what resources/efforts in Research does it build on?

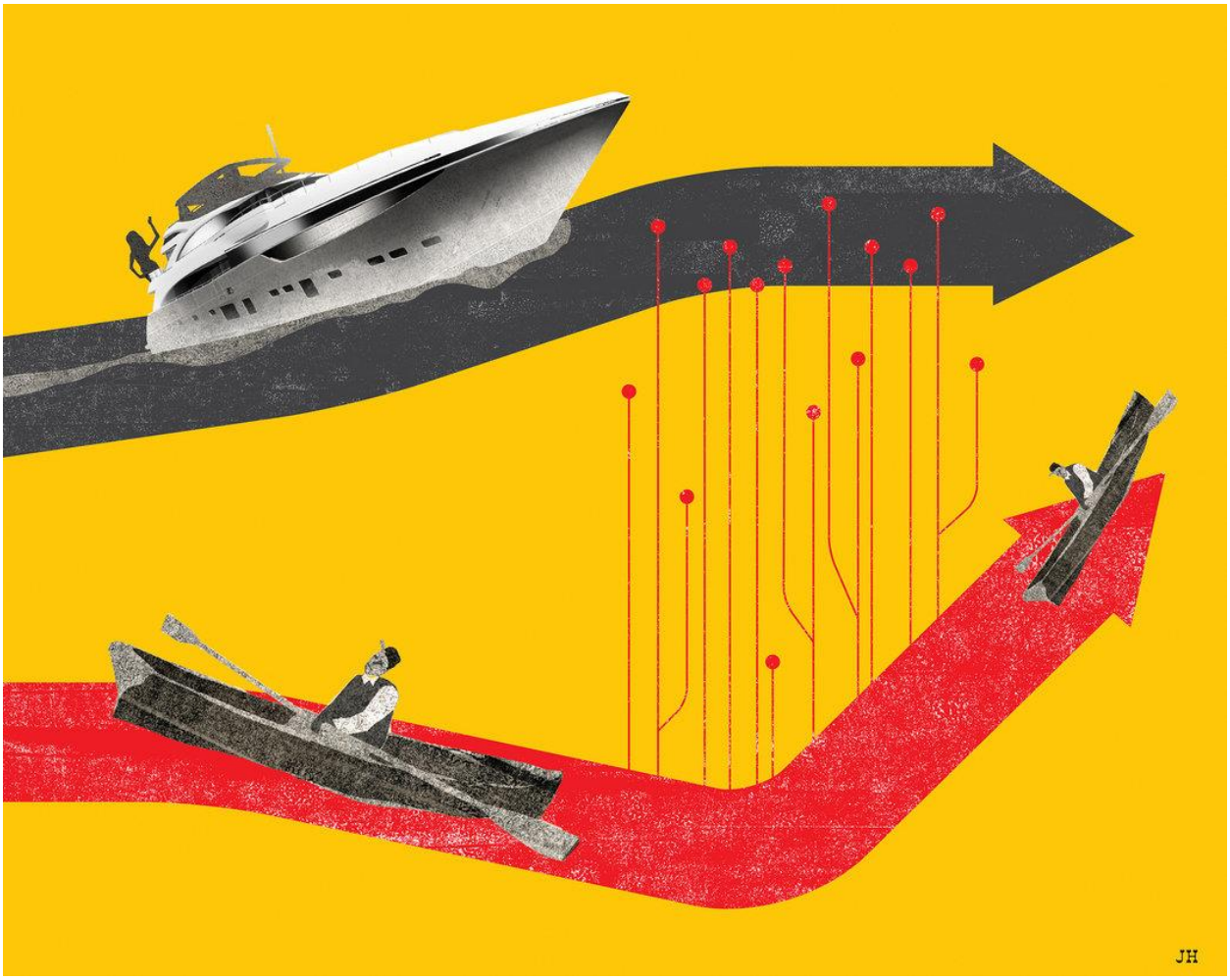
The proposal is achievable for three reasons. First, it builds upon existing human capabilities (through the NGOs mentioned above and other similar initiatives) that could achieve the binary success criterion if not for problems of scaling. Second, it builds upon technologies that are in their incipient stages, including the Choose Better Statement from IBM Watson Health Analytics mentioned above, Watson Tradeoff Analytics, advances in the financial regulation space (repurposed appropriately) [4], Watson Personality Insights, and many others. Third, it builds upon data and knowledge available through document corpora that exist in various places.

why is it AI?

The proposed system is a flexible rational agent that perceives and proposes actions that maximize its chance of helping people, the very definition of AI.

what is the real end goal and why should IBM care about a successful outcome?

The proposed goal is already a real end goal that can be sold to all of IBM's public sector clients and really advance the productivity of the world significantly; taking the idea further, if such a system can advise the underprivileged segments of society well, it can be enhanced to do the same for all segments of society and be appealing to businesses of all shapes and sizes.



References

[1] https://www.wired.com/2016/10/president-obama-guest-edits-wired-essay

[2] https://www.wired.com/2016/10/president-obama-mit-joi-ito-interview

[3] http://qz.com/796768/the-new-approach-to-philanthropy-harnesses-data-to-spark-productivity

[4] http://www.economist.com/news/finance-and-economics/21709040-new-banking-rules-baffle-humans-can-machines-do-better-it-knows-their-methods

[Image Source] https://static01.nyt.com/images/2014/12/07/business/7-VIEW/7-VIEW-master1050.jpg

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