

Podcast Name: *ACM ByteCast*

Episode: Edward Chang - Episode 50

Welcome to the *ACM ByteCast* podcast, a series from the Association for Computing Machinery! The podcast features conversations with researchers, practitioners, and innovators at the intersection of computing research and practice about their experiences, lessons learned, and visions for the future of computing. In this episode, host Rashmi Mohan interviews guest Edward Y. Chang, an Adjunct Professor in the Department of Computer Science at Stanford University since 2019. Prior to this role, he has been a Director of Google Research, President of HTC Healthcare and more. He is the Founder and CTO of Ally.AI, an organization making groundbreaking moves in the field using Gen AI technologies in various applications, most notably healthcare, sales planning, and corporate finance. An accomplished author of multiple books and highly cited papers and has won numerous awards including the Google Innovation Award and the Presidential Award of Taiwan for his work containing the COVID-19 outbreak.

To begin, Edward introduces himself and reveals what drew him to the field of computing. He was born in Taipei and came to the U.S for college, first at UC Berkley studying Operations Research. He then joined Stanford, where he received his MS and PhD. At Stanford, Edward's classmates would become the Co-founders of Google. His current interest lies in studying consciousness as related to AI. This is a very exciting era for him, as Gen AI aims to mimic human consciousness.

Edward is a credit contributor to the development of the DVR. When he was at Stanford in 1995, his advisor asked him to work with a video streaming network. This inspired his thesis, which focused on how to buffer data in local devices such as hard discs. The process used a disc, rather than a tape, to revolutionize VCR technologies. After joining the faculty at UC Santa Barbara, Sony was interested in collaborating with VCR technology. When this research issue no longer felt challenging for Edward, he switched his focus to machine learning.

While at Google, Edward's focus was to improve the machine learning infrastructure accuracy to power Google's multiple functions. Initially, he was warned that the job would be too complicated and time consuming. However, it wasn't long before machine learning to process big data took off in 2014. After this contribution, Edward felt it was time for him to contribute to his birthplace of Taipei. He joined HTC when it was a Pixel manufacturing company, then sold the entire cell phone division to Google. His time in the healthcare realm paved his way back to academia. A collaborative effort between UC Berkley and HTC in 2020 enabled virtual reality technology able to scan a patient's brain. Prior to surgery, a surgeon can fly into this brain scan and get a better idea of the structures. Because these technologies must be screened and approved by the FDA, the invention was not able to be commercialized in time. The technology was transferred to other entities who are continuing the research.

Then, Edward highlights the inherent limitations of traditional AI. With the new conscious-modeling technologies Edward is working on, AI is moving far beyond its former limitations. The technology, Edward reveals, has already been used in healthcare, sales planning, and

investment banking. Within these AI functions, humans' role is limited to being a moderator. In this model, bias and hallucinations are drastically reduced. Before wrapping up, Edward identifies the challenges he is currently facing in the development of these technologies. It is important to him to ensure the product is of the highest possible quality.

In closing, Edward addresses the commonly asked question: What will the role of humans be in a future AI landscape? Although humans may be limited to being moderators, he believes that a knowledgeable moderator will generate even better results and insights. This means that humans should still pursue knowledge. The future will likely reveal new careers, applications, and pathways to support our own leadings. Finally, he reveals his underlying passion for poetry and literature.

Key takeaways:

2:02 - Edward introduces himself and shares what drew him to computing.

5:00 - Edward's work in launching the initial DVR.

8:27 - The main functions of Edward's work at Google.

16:04 - Edward's work in Taipei with HTC.

19:00 - Combining healthcare and virtual reality.

22:40 - The limitations of traditional AI.

27:05 - Where are these conscious-modeling AI technologies in their development?

33:18 - The role of bias and hallucination in conscious-modeling AI.

34:30 - The challenges Edward is facing in developing this technology.

39:20 - Where humans fall into an AI landscape.

41:00 - Edward's other hobbies outside of computer science.

Links

Learn more about [Edward Y. Chang](#).

Learn more about [Rashmi Mohan](#).

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