The Future of Artificial Intelligence in Business

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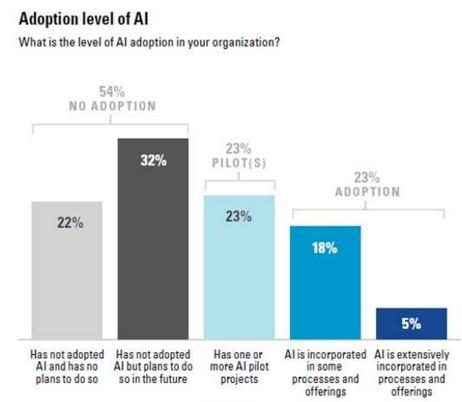
INTRODUCTION

Artificial intelligence is defined as the simulation of complex human intelligence in a machine system. Applications for the field have been ever-expanding, and they are now utilized in many areas of the modern technological world. We can now see artificial intelligence embedded within videogames, robotics, speech recognition, search engines, media sharing services, online shopping sites, and more. One of the most prominent sectors using AI is business. AI is in the process of revolutionizing the business world. In a Forbes survey of over 3,000 business executives, managers, and analysts in 112 countries and 21 industries, 84% of respondents said that AI will enable them to obtain or sustain a competitive advantage, 83% believe that AI is a strategic priority for their business, and 75% stated that AI will allow them to move into new businesses and ventures (Columbus, Forbes). 32% of companies plan to adopt AI and 46% already incorporate it in some way. For the most part, AI is used by tech companies to make products or specialized systems, but non-tech companies are finding ways to utilize AI for finances, data gathering, and marketing.



Survey of various organizations shows the average adoption levels of AI (MIT)

RESEARCH METHODOLOGIES

In order to look at how tech companies utilize artificial intelligence, the most effective method was to consult those who work in fields that relate to the topic:

1. Interviews of various professionals were conducted, and the conversations recorded.
2. Interview times were around 10 minutes and allowed for insightful discussions.
3. The three major corporations represented were Google, Yahoo (Verizon), and Intel. In order to gauge different perspective, including multiple companies was important.
4. After the interviews, common themes were synthesized.

Interview Questions:

- What is your name?
- What company do you work for?
- What sector do you work in and what is your specific job within this sector?
- How does your profession relate to Computer Science/AI?
- Do you usually work directly with computers (actually programming, app development, etc.)?
- How does your company utilize AI?
- What tasks are impossible without AI in your company?
- What limitations do you foresee for the continued development of AI?
- How do you think more advanced AI will affect the job market?
- Do you think the future of AI will affect your job positively or negatively? Why?
- Do you think the future of AI will affect the world as a whole positively or negatively? Why?

DATA AND FINDINGS

	Wei Li (Vice President and General Manager of Machine Learning at Intel)	Minnie Ho (Wireless Engineer/Systems Architect at Intel)	Rohit Chandra (Search and Online Advertising at Yahoo)	Tushar Chandra (Software Engineer at Google)
Current applications of AI in respective fields/companies	- Hardware and software for AI is used in many areas such as drone, robots for testing, and chip defect detection.	- "Wireless engineering not directly related to AI, but the same mathematics that you use to minimize performance metrics in terms of minimizing the bit error rate or maximizing throughput, minimizing power, uses the same mathematics that's in most AI algorithms"	- Search and advertising were early adopters of AI - Been using for 10-20 years - AI "hugely improves our products in a systematic way"	- Google been using for more than 10 years - Most of their products use AI in some way - Search results, image recognition, translation between languages, etc.
New ventures and integration	- Intel is trying to implement AI in more of their products	- Intel is trying to get into AI - Intel is selling camera chips that use machine learning algorithms to allow for image recognition	- Spawning investments in hardware, data science, etc. - Intuit is adopting a program that can use AI to recommend smarter tax returns, which an accountant would traditionally do	- Google has built an AI system that can look inside an eye through a lens and diagnose a condition called diabetic retinopathy - Clinicians will put out of work, but accessibility for rural areas and poorer countries will increase
Future effects on the job market/society	- AI will eliminate jobs, but will create new ones in the field of computer science - Creates opportunities for those with AI skills	- AI will replace more repetitive tech work, but won't replace those who continuously keep on top of it and understand new advances - Teaching computer science in school curriculum will become more important, as more jobs will require knowledge on the subject	- Some industries will be disrupted - Whenever something becomes easier, it spawns new skills - Transitions are always somewhat disruptive to society - People will need to be trained in new skills to adapt	- Many applications of AI won't affect the job market - They solve problems for which there were no solutions before - While pathologists and radiologists may be replaced, these problems will become more algorithmic and computer driven, improving accessibility and cost worldwide
Future possibilities and speculation for AI development	- AI will assist humans by replacing some functions in the near future, but will take more time to replace more complex professions	- "I think every technology has potential for a tremendous amount of bad and a tremendous amount of good"	- AI creates a greater demand for people and skills - AI is giving tools to build better products	- Technology is not good or bad; it depends on how we use it - Continued development is complicated and hard to predict
Limitations	- No fundamental limits	- Many jobs are not easily programmable or replaceable - Task-oriented jobs which require less skill still require lots of physical movement, which is hard to replicate effectively with AI	- Being able to use AI at such scale requires massive computing capabilities and an increase in people being able to work in real time - "Sparse features" - AI systems need to "learn" before performing well, which could be an issue - "Explainability" - When an AI system occasionally gives an undesired output, it is very hard to tell why	- The public is afraid of what AI can do - AI mistakes can be widespread and catastrophic - When AI fails, finding out why can be extremely difficult

Key Takeaways and Ideas

- AI will take certain jobs away while also creating new jobs for skilled engineers
- Companies wishing to stay ahead are investing significantly in AI projects, which is shown beyond solely tech companies
- AI will enable us to solve previously unsolvable problems in many fields
- AI's applications are more far-reaching than commonly thought, expanding into many fields with new innovations constantly
- One of the biggest challenges will be retraining employees and creating new AI-based curriculum

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Analysis and Evaluation

One of the most common sentiments expressed during the interviews was how AI isn't necessarily a "good or bad" new technology, but simply a product of how we utilize it. All four stated that they believe AI will surely take jobs away, but that it will also create new jobs for those with relevant skills. Standard education will inevitably have to adapt and incorporate more computer science in the curriculum as a result. There will undoubtedly be a transition period of societal unrest, but most AI skeptics fail to see the bigger picture. Even though the prospect of increased AI integration scares a sizeable portion of the public, Wei Li explains how there is still a long way to go before many jobs are replaced. Even task-oriented jobs that don't require as much skill require a large amount of movement and human interaction, as Minnie Ho mentioned, which is difficult for machines to simulate. Continued integration will force people to adapt and learn new skills, which may be disruptive in the short term, but is necessary for the progression of human society. This will affect everyone in some way. Students will need to understand AI in order to stay ahead, especially due to the fact that many won't be of professional age until even more AI systems are in place.

As Tushar Chandra explains, many previously complex tasks will become much more accessible to the world:

> ***Example**: Google has developed an AI system that can detect and diagnose diabetic retinopathy by looking into the eye through a lens. This device will unfortunately cause some clinicians to lose their jobs, but it will also enable needed accessibility in developing nations and communities.*

CONCLUSIONS, IMPLICATIONS, AND NEXT STEPS

Though a substantive amount of qualitative information was gained throughout this study, much more needs to be done to fully understand the topic. While AI is clearly beneficial for tech companies, as all four interviewees stated, other types of companies are also beginning to implement AI for a wide variety of tasks. In addition, those interviewed all work for large, profitable tech companies, implying that their opinions on the subjective portions of the interview are in favor of AI development. This being said, they each gave substantial amounts of objective information and wisdom regarding the topic. While Google and Yahoo were early adopters of AI for search and advertising reasons, companies like Intel have also begun implementing it into many different product fields. Companies use AI for image recognition, debugging, speech recognition, drones, accounting, finances, and many more. A more expansive study that analyzes a wider variety of opinions is necessary, but this smaller study did reveal a lot of interesting information, and it gives insight into the ever-expanding functions of AI in different areas.