Artificial Intelligence

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Introductions

Malvik Majithia

- Born and brought up in Mumbai
- 2007 - B.E. in Computer Science from D.J.S.C.O.E Mumbai University
- 2009 - M.S. in Computer Science from University of Texas majoring in Artificial Intelligence and Database Systems and a minor in Information Security
- 2011 - Systems Manager for University of Texas Dept of Research Administration
- 2011 - Research Assistant with University of Texas, Dept of Brain Sciences
- 2014 - PGDM International Business SIMSR
- Present - Managing Director Hans InfoTech LLP
- Present - Director and CTO Searchtrade.com Pte Ltd

Hans InfoTech LLP

- Software Design, Development, Testing and Maintenance Services
- Mobile App Development
- Digital Marketing
- Data Analytics

KYC

Please tell me about yourself

Talk Outline

1. What is Artificial Intelligence
    a. Definition
    b. Branches of AI
    c. History
2. Current State of AI
3. Applications
4. What CAs need to be aware of
5. Challenges
6. Resources

Artificial Intelligence

- Artificial intelligence is a branch of computer science that aims to create intelligent machines
- Every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it
- Attempts are made to find out how to make machines use language, form abstractions and concepts, solve kinds of problems now reserved for humans and improve themselves

Written in 1955 by J McCarthy

Original 7 Aspects of AI

- Simulating higher functions of the human brain
- Programming a computer to use general language
- Arranging hypothetical neurons in a manner so that they can form concepts
- A way to determine and measure problem complexity
- Self improvement
- Abstraction - deal with ideas and not events
- Randomness and creativity

Since 1955 - realistically achieved to some degree: self improvement, language and measure of problem complexity

Recently - randomness and creativity is being explored. In 2016, AI wrote its own movie and web series

What does intelligence comprise of

- Generalization learning - A method of learning that enables the learner to be able to apply that learning and perform better in situations that are different from what they learned about or are not previously encountered (chess)
- Reasoning - To draw conclusions appropriate to the problem at hand (self driving)
- Problem Solving - Given data, find x (Maps)
- Perception - analysing the environment and drawing relationships between objects scanned (self driving cars)
- Understanding language - by following syntax and semantic rules (alexa)

Intelligence is not a single dimension. The other AI

The Analogy

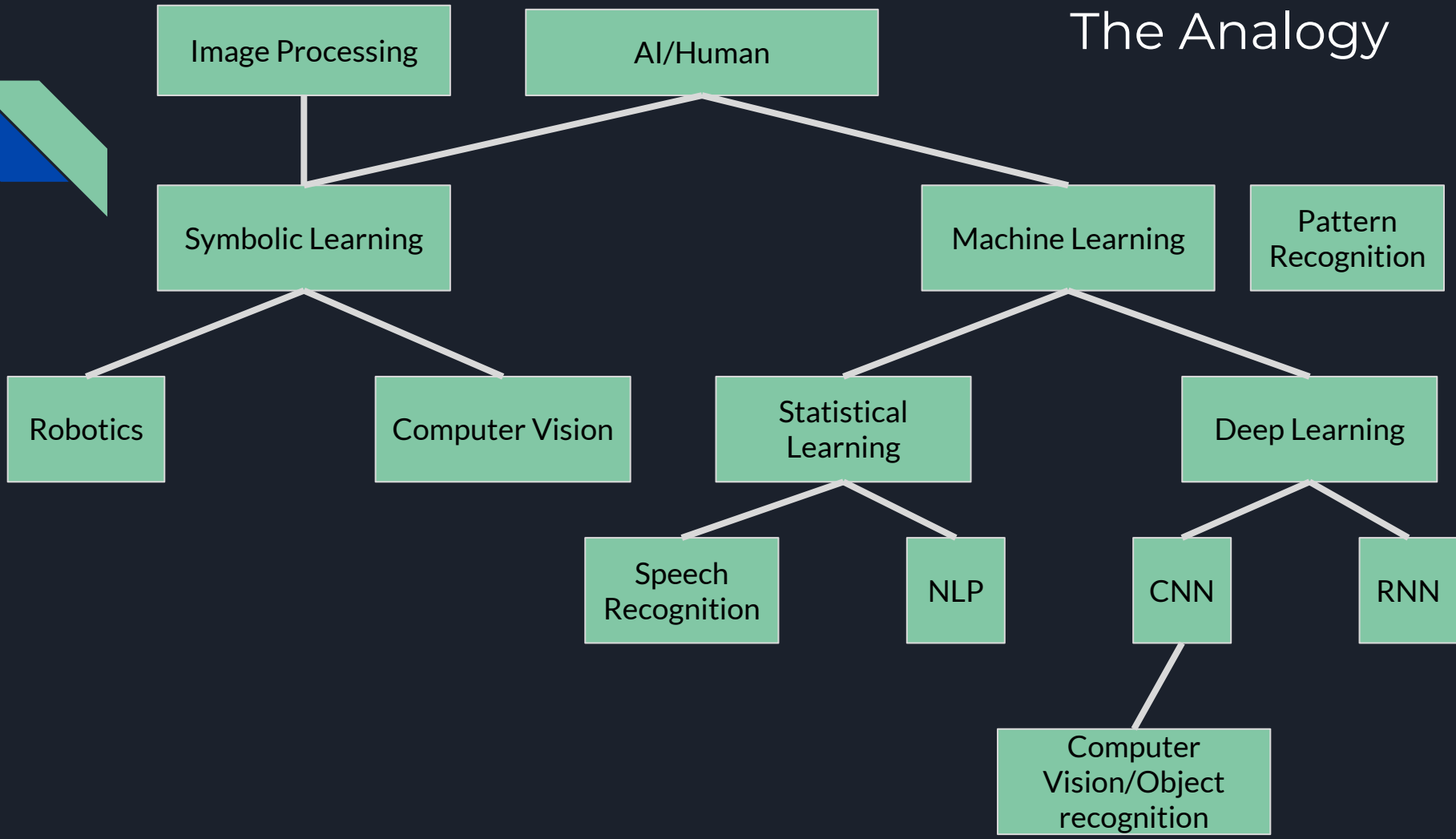


Image Processing
AI/Human
Symbolic Learning
Machine Learning
Pattern Recognition
Robotics
Computer Vision
Statistical Learning
Deep Learning
Speech Recognition
NLP
CNN
RNN
Computer Vision/Object recognition

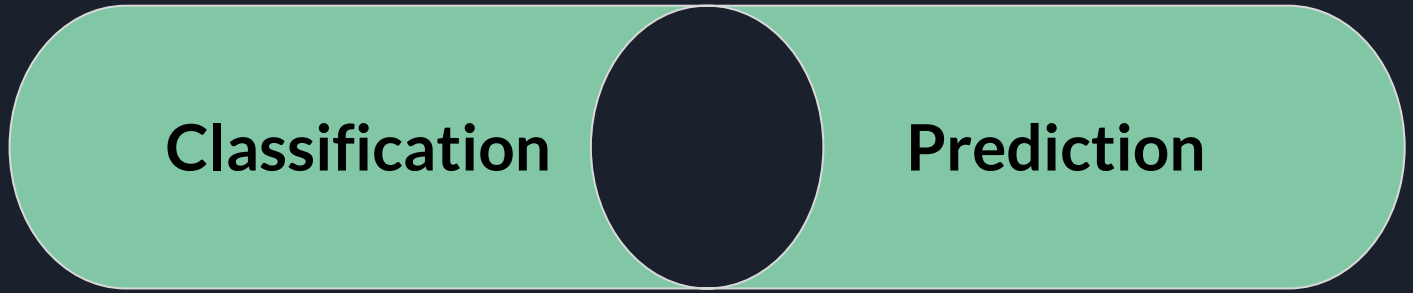
Verticals

- Machine Learning: algorithms that enable s/w to improve its performance over time as it gathers more data. GIGO.
  - Neural Networks
  - Predictive Analysis
- Computer Vision
  - Image recognition
  - Machine vision
- Natural Language Processing
  - Translation
  - Classification and clustering
  - Information extraction
- Speech
  - Speech to text
  - Text to speech

Verticals

- Robotics
  - Manufacturing
  - Vehicles
  - Bots
- Expert Systems
  - A system that employs human knowledge in a computer that enables it to solve specific problems that would normally require a human.
  - Commonly confused with automation most of the time.
  - Built with hand crafted rules.
  - Game playing bots and chatbots are generally like this
  - Deep minds alphago was the first non expert system
- Pattern Recognition, planning, scheduling and optimization
  - Salesforce planning
  - Hardware Infrastructure planning
  - Search Engines

Application of learning



Learning requires data: Example - sales vs ad spends

- Supervised Learning
- Unsupervised learning
- Reinforcement learning

History

Interest was sparked after WWII due to Alan Turing's work. He gave a lecture on it intelligent machines in 1947. The Imitation Game

1950 - Turing test was proposed and Isaac Asimov proposed the 3 laws of robotics

1951 - First AI Based Program was written

1955 - First chess game playing bot was created

1959 - MIT AI Lab is setup

1961 - First robot begins ops in GMs car assembly line

1964 - NLP is introduced to the world

1965 - ELIZA is released

1972 - MYCIN, an early expert system for identifying bacteria causing severe infections and recommending antibiotics, is developed at Stanford University

History

1986 - First driverless car, a Mercedes-Benz tested in Munich

1989 - Carnegie mellon creates the first autonomous vehicle using NN

1997 - Deep blue beats Kasprov

1999 - AIBO launched by Sony and MIT AI Lab releases first emotional robot

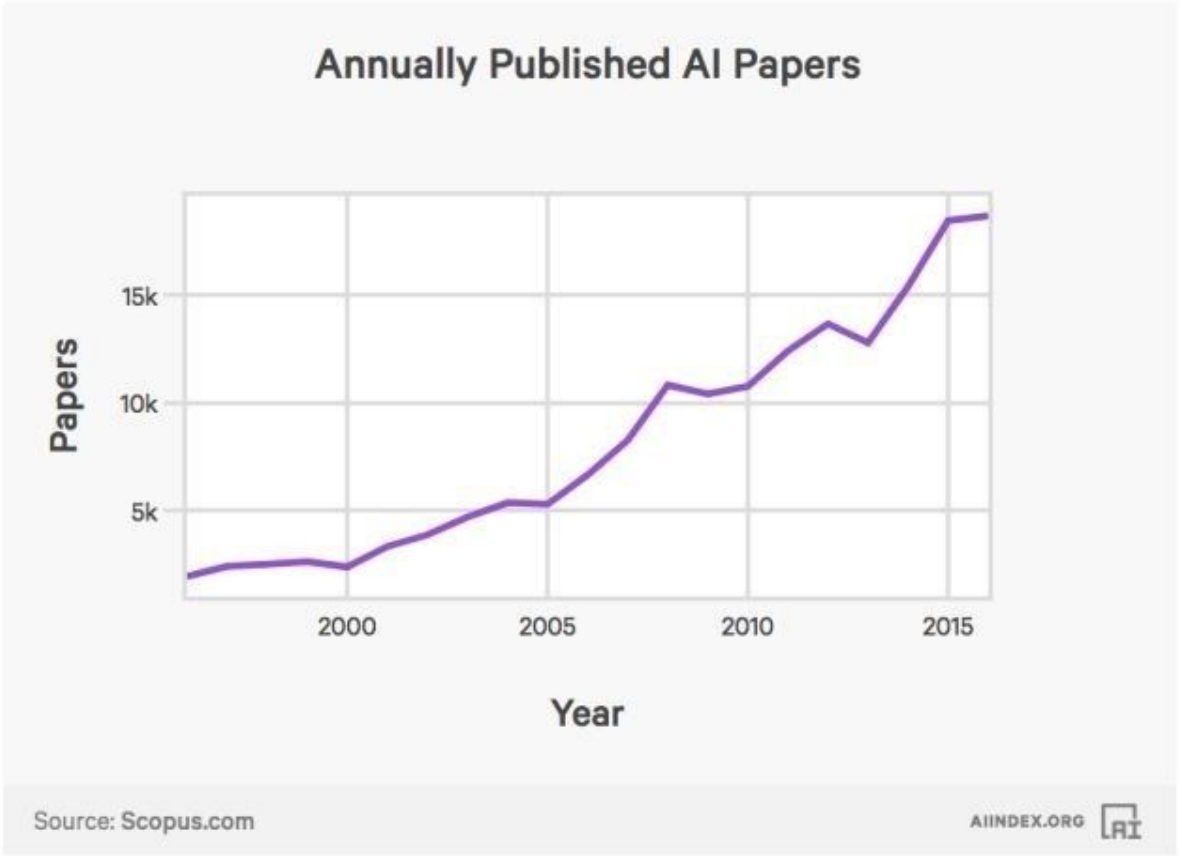
2009 - Google starts testing self driving cars

2011 - IBM Watson wins at Jeopardy. Siri, Cortana, Google Now are released

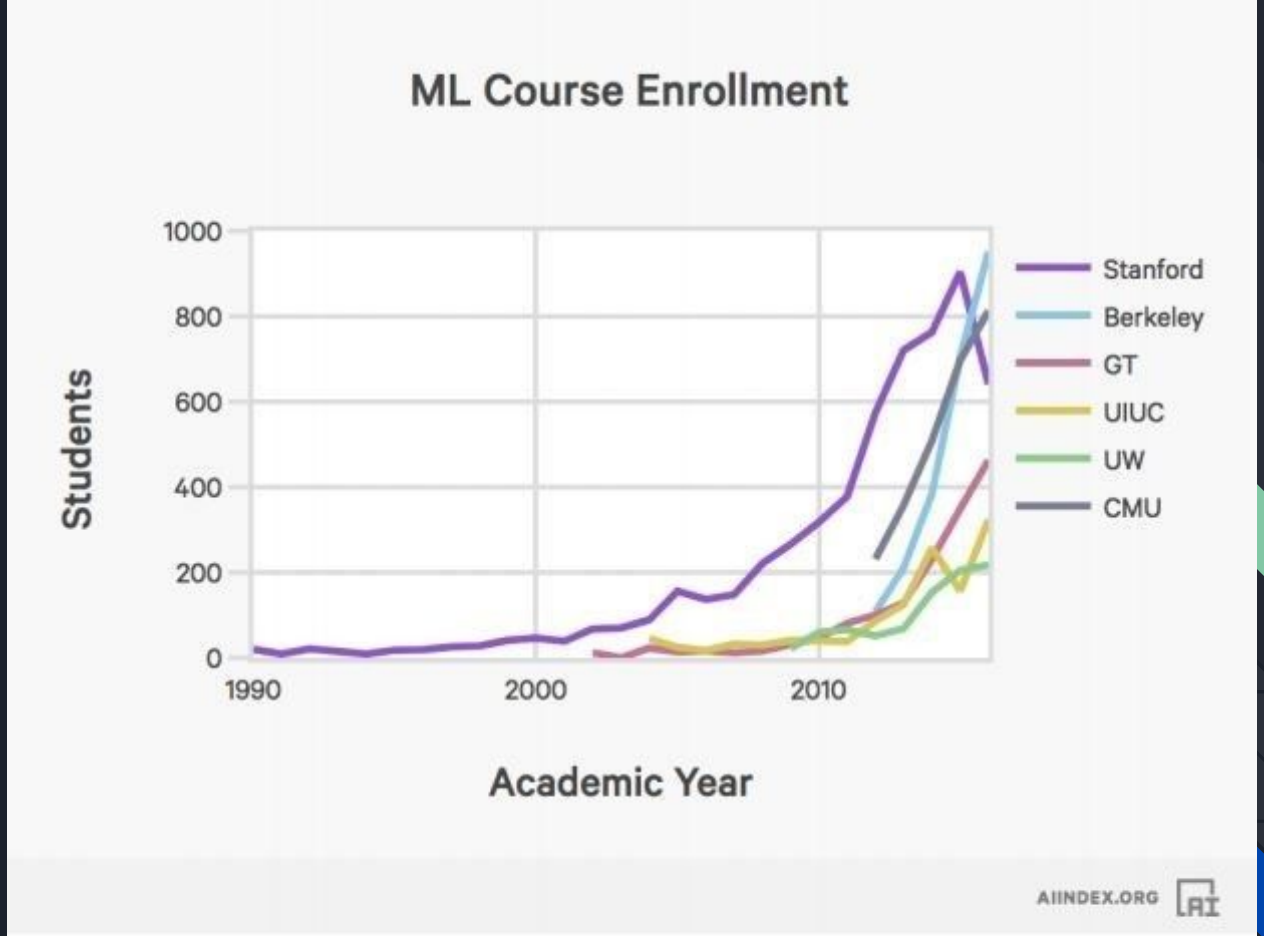
2016 - Alpha Go winner

Wikipedia can date AI roots back to antiquity

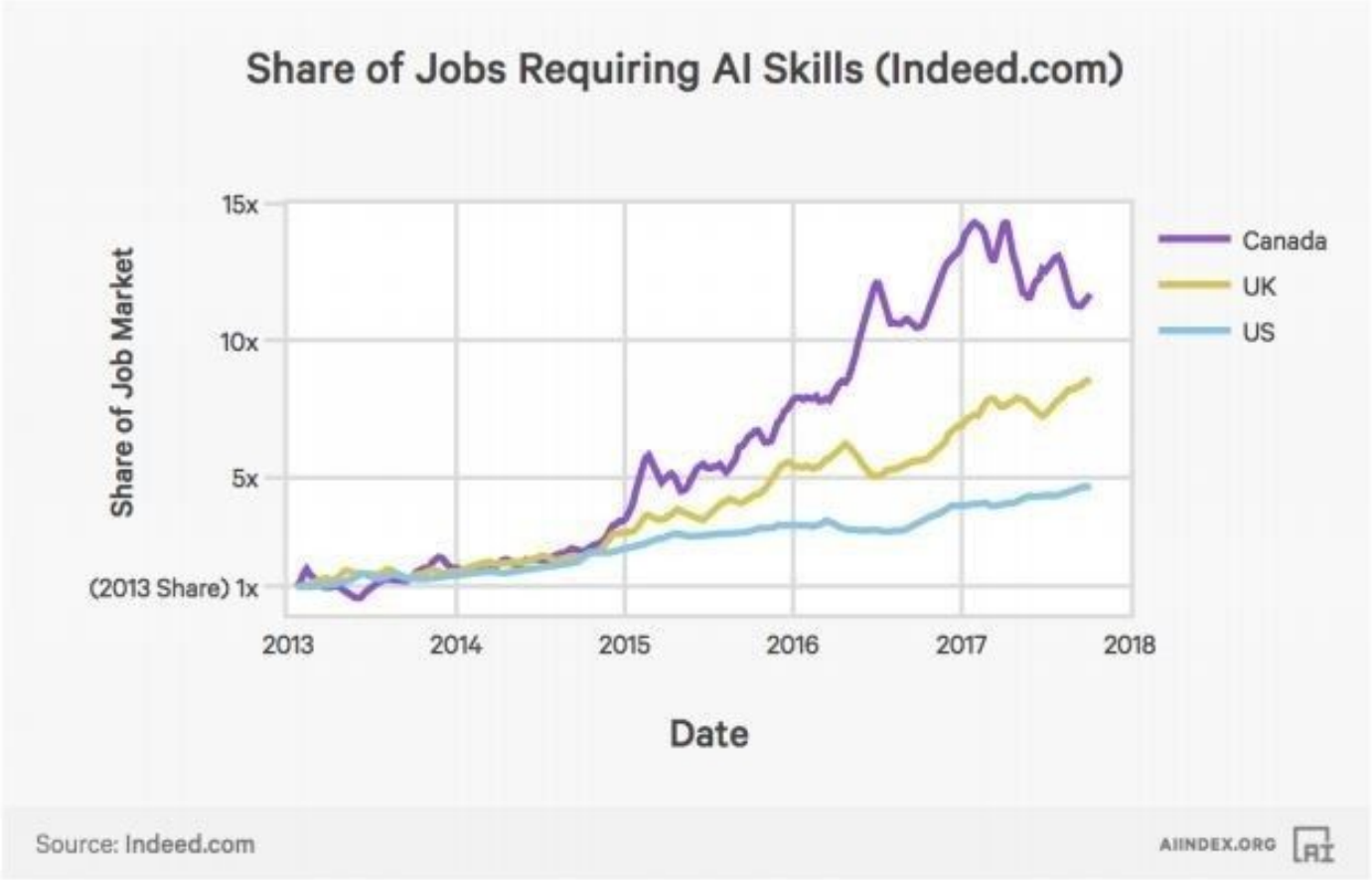
Current State of AI



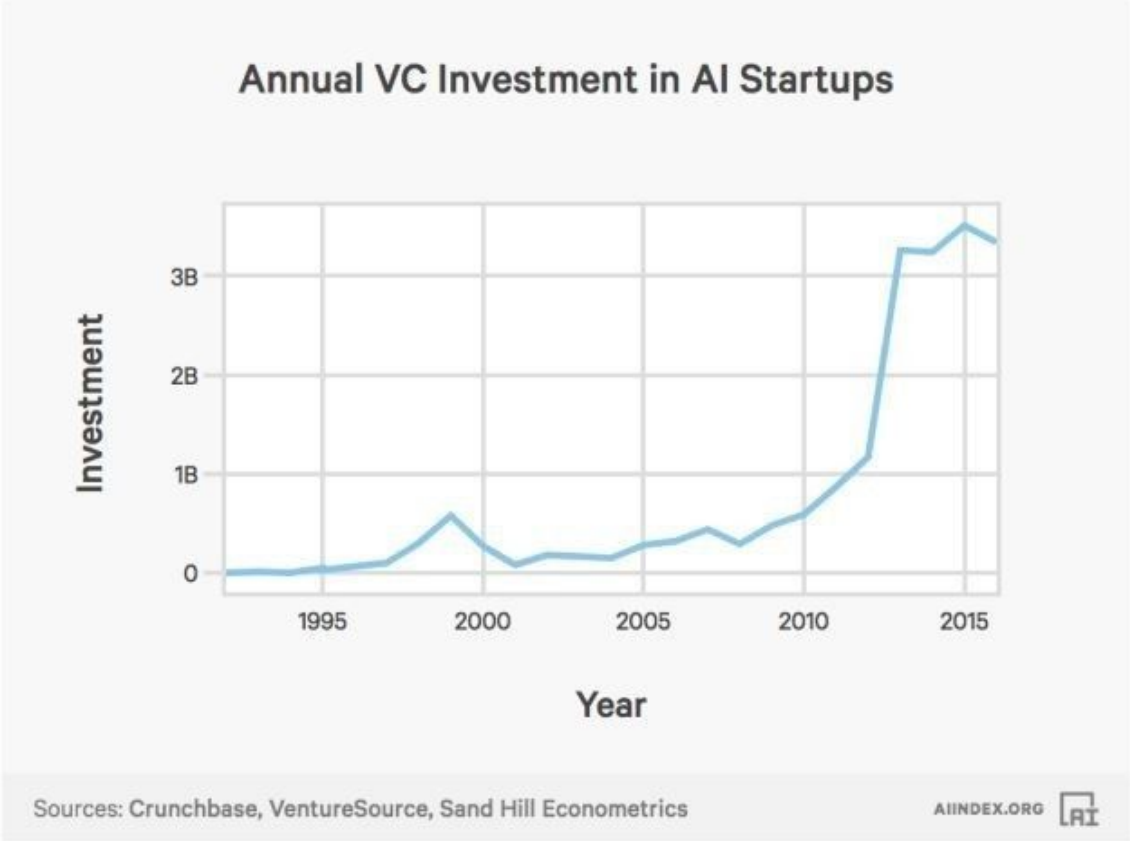
9x *The number of AI papers produced each year has increased by more than 9x since 1996.*



Note: Many universities have offered ML courses since before the 90's. The graphs above represent the years for which we found available data.



Note: Despite the rapid growth of the Canada and UK AI job markets, Indeed.com reports they are respectively still 5% and 27% of the *absolute* size of the US AI job market.



6x *Annual VC investment into US startups developing AI systems has increased 6x since 2000.*

Some more trends

Statistics by a BCG survey in Sept 2017 of more than 3,000 business executives, managers, and analysts in 112 countries and 21 industries

- **84%** of respondents say AI will enable them to obtain or sustain a competitive advantage
- **83%** believe AI is a strategic priority for their businesses today
- **75%** state that AI will allow them to move into new businesses and ventures
- **72%** of respondents were from the technology, media, and telecommunications industries
- **Customer-facing activities** including marketing automation, support, and service in addition to IT and supply chain management are predicted to be the most affected areas by AI in the next five years
- **23%** of respondents have incorporated it into processes and product and service offerings today

AI in Business and Professional Life

Productivity Tools

Smart Email categorization
Ad blockers
Intelligent Calendars

LnD

Customized evaluations and training programs

Admin

Smart budgeting
Automated inventory
Virtual Assistants

AI in Business and Professional Life

HR

AI in recruitment
AI in performance reviews
FAQs
Predicting Exits

Project Management

Unbiased KRA
Mood Analyses
Knowledge Base Mgmt
Automating ops

Legal

Fraud detection
transactional compliance
Information de-duplication
Video 1

AI in Business and Professional Life

Finance

Transactional Fraud Detection
AML
Predictive Analysis of Investments

Marketing

RoI predictions basis many dimensions
Impact Analysis and Market Research
Personalization of Communication

Accounting & Audit

Applications

Product

Process

Insights

AI in the Big 4

Deloitte.

- Most AI activities fall under Insight or Process

- Document-review platform has automated the process of reviewing and extracting all the relevant information from contracts
- LeasePoint– powered by IBM utilizes Deloittes knowledge in leasing industry to teach the AI-enabled system to develop an end-to-end leasing portfolio
- Visual inspection of assets– Using IBM's Maximo technology. More in this video
- Deloitte Catalyst offers funding, and access to Deloitte's client base in order to partner and flesh out their business applications

AI in the Big 4

- Most AI activities fall under Process

- Use of AI has made it easier to capture relevant information from contracts. EY claims that this technology helps the firm deliver more accurate, efficient audits for its clients
- EY Australia claims that 50% of its bank audit confirmations were lodged using the AI-enabled system. This AI-enabled system can accept and confirm audit requests, process and provide the auditors with the relevant documentation for final analysis and judgment
- EY is testing an AI proof-of-concept, using computer vision to enable airborne drones to monitor inventory during the auditing process

AI in the Big 4

- Most AI activities fall under Process

- The International Accounting Bulletin awarded the ‘Audit Innovation of the year’ for PwC’s technology GL.ai in October 2017
- GL.ai is an AI-enabled system capable of analyzing documents and preparing reports
- They claim to have made a significant investment in Natural Language Processing (NLP)- to make sense of complex lease agreements, revenue contracts, and board meeting minutes to form meaningful insights for clients
- They want to use that technology to make sense of regulatory notices and implement changes in rules and laws into their audit systems automatically

AI in the Big 4

- Most AI activities fall under Product, Process and insights. KPMG Ignite

- Call Center Analytics Engine- Utilizes NLP
- AI Anomalous Event Predicting Tool
- Document Compliance Assessment Engine
- Invested in accelerators and an AI Lab named Ignition

Accounts Payable - Case Study

AI-driven AP automation solutions are able to learn as fast and as accurately as an experienced human to:

- Identify and interact with suppliers;
- Automatically intake, code, process and route invoices, using optical recognition technology; and,
- Denote payment deadlines, approval workflows, and the approvers
- Generate revenue reports, etc

“The improvements are due to capturing, automatically coding and storing invoices instead of handling paper or sending around PDF files. The system observes and learns from clerks’ keystrokes, continuously improves GL coding, and reduces errors.”

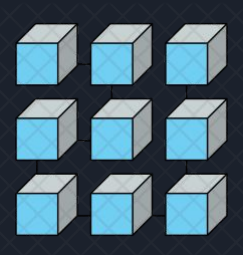
Bryan Schmidt, controller for Unite Here Health

What CAs need to be aware of

Artificial Intelligence

Workflow Automation

Data Analytics



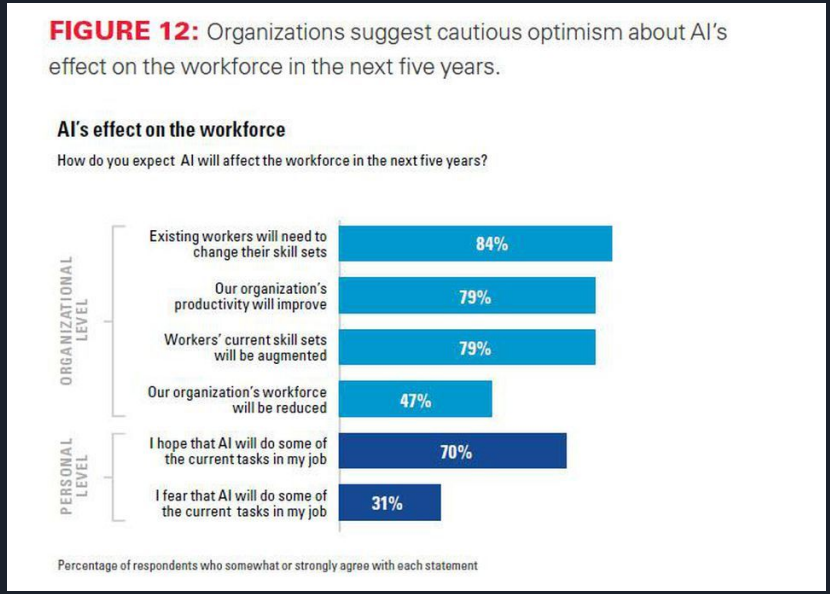
Blockchain

Sampling is now unnecessary
Data is easier to analyze
Auditors really now just need to make decisions

Software Audits will be more relevant
Data Analytics is a necessary skill
Advisory REQUIRES a human touch

Challenges

- It is not perfect
  - Google translate
- Data
  - Privacy
  - MS Twitter bot
- Workforce impact
  - Specificity of skills
- Time and money
- Loss of control and closed minds
- Regulation
- FAGMA
- Creator's limitations
- Bare necessities



Industry Use Cases

- AI powered robots run warehouses now
- Utility companies use AI to predict electricity demand.
- Automakers are embedding the technology into self-driving cars.
- Financial services companies use AI in the customer service systems.
- Data security - Malware, Spam, suspicious activity, Biometrics
  - Video 2
- Infrastructure management (TCS Ignio)
- Finance - Intelligent HFT algorithm, fraud detection, numerai
- Healthcare - predicting heart issues, path AI
- Marcomm - personalization
- Search Engines
- Support - Chatbots
- Media - reputation manager, Shazam
- Travel and Transport - Lyft, Uber, smart travel agent, translators
- Legal - NearLaw
- Robotics
  - Video 3
- Insurance ...?

Calls to Action

- Research
  - Learn new skills
- Become a thoughtful leader
  - Leave the repetitive work to robots - matching payments to invoices
  - AI can analyse the data from every accounting project ever completed in your company
  - Let AI learn the audit parameters and then feed it the data
- Evaluate the merger between audit and risk assessment

Myths

- AI will take away human jobs
- We want privacy - restricting AI's fuel
- AI is expensive
- AI algorithms can figure out any and all of your messy data
- Artificial intelligence will take over the world
- You need a gigantic amount of data

Thank You

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OR

Message me on WhatsApp at 9320027660

for continuous updates and useful resources