ARTIFICIAL INTELLIGENCE IN EDUCATION

Dr Vinnie Jauhari
Director Education Advocacy & Skills Lead
Microsoft Corporation India Pvt. Ltd.
AGENDA

• Artificial Intelligence and applications
• Use case scenarios in Education
• Guiding Principles
• Implementation of AI in an Education System
• Ethical aspects of using AI
John McCarthy (1927-2011) was an American computer scientist and cognitive scientist. McCarthy was one of the founders of the discipline of artificial intelligence.

Artificial Intelligence (AI) has been an integral part of our lives. The branch of science and technology that is devoted to the creation of machines that learn and think as intelligently as human beings is known as Artificial Intelligence or AI.
Artificial Intelligence is an approach to make a computer, a robot, or a product to think as smart as humans think and possibly more.

The aim of AI is to improve computer functions which are related to human knowledge, for example, reasoning, learning, and problem-solving.
Applications of AI in Work and Personal life

- Healthcare
- Agriculture
- Retailing
- Productivity in Work
- Personal Life
Underlying Technologies for AI

- Data and its management
- Input different types of data
- Cloud Technology
- Applications
- Predictive applications, services, solving problems
- Efficacy and underlying Principles
Data can be in the form of text, images, numbers and even sounds. The data sets are used to create an experience via analysis. The experience is then turned into learning to create Artificial Intelligence.
Data sets for image processing can be used for object captioning, detection and segmentation of the dataset (Maj, 2019).

The images of the faces are registered to understand the expression and caption it accordingly.

Datasets for image processing

Segmentation and captioning through Machine Learning
While a program can analyze the data on different parameters, another important one added to the layer, is that of the sentiment. This layer of sentiment analysis when put into context can actually categorize the various emotions as per the type and its intensity. The algorithm used is advanced and is designed to generate accurate and useful results. Examples of the same can be used in social monitoring and listening, customer experience analytics and even image analytics to understand the sentiment of the customer.
Two `Polarity` nodes are created; one for positive sentiment and the other for negative sentiment. This is done in order to identify the right sentiment of a person. Then the connected words affiliated with a given polarity to that node are submitted for accurate customer sentiment analysis.
There are different kinds of data sets that can be used to achieve a particular objective in machine learning in artificial intelligence. Here are a few of them:

- **Image Processing**
- **Sentiment Analysis**
- **Natural Language Processing**
- **Video Processing**
- **Speech Recognition**
- **Internet of Things (IoT)**
Driving Insights

• Manually looking up data, comparing or scanning through tables

• Analyzing charts, metrics or maps

• Computing, interpreting and communicating performance

• Developing recurring status reports

• Opening multiple screens or referring to different applications
Cloud Computing - Education

Cloud enables scale, flexibility, economies of scale, Security, ROI, Lower costs

Solutions on Cloud In Education Assessments Content, Labs ERP Student Information Systems

ROI Operational Expenses rather than Capital Expenses

Augment the capability of users Invest in learning
Benefits of AI in Education

- Enhancing organisational and individual productivity
- Improving effectiveness of learning experiences
- Saves teachers time
- Personalisation of learning experiences
- Data insights
- Automating processes which can be faster and more effective
- Driving system governance and effectiveness
AI IN EDUCATION

Classroom Engagements

- Teaching and Learning in Classroom - Virtual Reality, use of tools for teaching, Gamified Learning experience - VR, Gamified Learning Experiences
- Personalisation of Experiences - Language, Translator, Pace of Learning, style of learning
- Grading of marks and auto generation of grade sheets
- Language Learning
- Developing assessments & Quizzes automatically
- PPT presentation coaching
- Reading progress
- Research projects - AI for Good - using different applications on Cloud
Gone are the days when the customer would come to know while chatting with a bot. In the current scenario with the help of both artificial intelligence and machine learning taken together, the Bot is designed to come up with a very specific and customised response to the queries of the customer. From maintaining a contact centre to catering to various business functions such as Finance and accounting, HR and IT helpdesk, virtual agents perform no longer basic functions but also take care of complex situation based query solving (IPsoft, 2019).
Speech Recognition

This is a technology wherein the system captures the natural conversation by human(s) and convert the same into instruction to perform the given tasks. These are uses in voice-response interactive systems and mobile apps.

Currently Used in

- Medical World
- Education
- Robotics
Conversational Artificial Intelligence or Conversational AI is a set of technologies that enable computers to simulate conversations. This form of AI is preferred because it is time bound and quite engaging. The element of conversation keeps the customer engaged and in the background it can simultaneously work on the customer delight aspect of the transaction. The amount of queries that can be handled by a business can be quite a lot as the query resolution time is lesser and queries can be solved effectively.
Understanding of BOT Framework and Development

A chat bot is programmed to converse with humans to help accomplish a task. In recent times, we have chat bots that can order food, write an email for us, set alarms, tell us about our financial data, save money, shop for us and even find restaurants for us to eat.

For example, Digit is a chat bot that helps you manage your expenses by showing your bank balance, upcoming bills and helps you save money through text messages. Another chat bot is the Hi Poncho chat bot which is available in Facebook Messenger which informs Facebook users about the weather in a location.

What can a BOT do?

Popular BOTs in 2021

1. WHO Covid 19 BOT - WHO Health Alert - The WHO Health Alert bot helps people protect themselves from infection, offers travel advice, and busting myths about the Coronavirus

2. Emirates Vacation BOT - The company targets different visuals and bot sequences based on the page someone’s browsing. Engagement rates rose 87% since deployment in 2018.

3. National Geographic - Einstein BOT - User friendly-6-8 minutes avg conversation, 50% user reengagement, 11 turns per conversation
Sketch2Code is an AI-based website "Builder" that converts your hand-drawn sketches to HTML.
Disabilities affect over 1 billion people worldwide

Visual
- Colorblind
- Low vision
- Blind

Hearing
- Hard of hearing
- Deaf

Cognitive
- Learning Disabilities
- Seizure
- Autism

Speech
- Speech impediment
- Nonverbal

Mobility
- Spinal cord injury
- Quadriplegia
- Arthritis

Neural
- Depression
- Bipolar
- Anxiety
- PTSD
- OCD

Diseases can span disability segments

Affects of Parkinson’s Disease
- Cognitive
- Speech
- Mobility

Affects of ALS
- Speech
- Mobility
Accessibility

The invention helped her write again.
AI AND ACCESSIBILITY

• Immersive Reader
  • Colors, Text, Speech to text, text to speech
  • Translator
  • Practice for self
  • Learning parts of speech
  • Pictionary applications
AI AND GOVERNANCE IN EDUCATION

• Data Analytics- Classroom level- student – teacher engagement
• District, State and National level
• Insights into use of services
• Differences in learning and competencies
• Predicting success and drop out and proactive measures
• Improving and tracking performance
AI IN EDUCATION

- Efficiency in administrative roles - dictate, language translation, writing into digital notes
- Customised and beautifully designed decks
- Analysis of data and suggested report
- Creation of Bots for navigating internal systems
- Setting cloud Labs and creating access to Softwares and Virtual machines
PRINCIPLES FOR AI

- Security and privacy
- Fairness
- Inclusiveness
- Reliability and safety
- Transparency, and
- Accountability
IMPLEMENTATION OF AI

- Leadership involvement and vision
- Governance
- Dedicated team
- Ethics Officer and compliance office and processes
AI FOR GOOD

Responsible AI
Discover how to think, design, and develop AI solutions in a more responsible way.

Responsible conversational AI
Learn Microsoft guidelines for the development of responsible conversational AI, such as chat bots and voice-controlled systems. Learn the benefits of making bots transparent and trustworthy.

Start the course  Explore how it works

Homomorphic encryption with SEAL
Learn how homomorphic encryption allows computation directly on encrypted data, making it easier to leverage the potential of the cloud for privacy-critical data.

Learn about homomorphic encryption  Explore how it works

AI for Earth
Solutions to environmental challenges require substantial amounts of data, computing power, and expertise. The Microsoft AI for Earth initiative provides organizations with open data sets, cloud compute grants, open-source APIs, and education.

Explore AI for Earth resources  Learn about the program
AI Business School Artificial Intelligence Courses - Microsoft AI
MS Learn- AI Pathways for Learning- Microsoft Learn | Microsoft Docs