Artificial Intelligence – Opportunities, Now & Future

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18 March 2021 – LaSalle College, Montreal, QC, Canada
Outline

• What is Artificial Intelligence?
• Applications of AI
• Categories of AI
• How to learn AI?
• Future of AI
• AI – Fun vs. Dangerous
• Q&A
What is Artificial Intelligence?

Robots?
Artificial Human-being?
Artificial Animal?
...
A threat to human being?
...
...
etc.?
Information Overload

• “People read around 10 MB worth of material a day, hear 400 MB a day, and see 1 MB of information every second” - The Economist, November 2006.

• In 2015, consumption will raise to 74 GB a day - UCSD Study 2014
What is Artificial Intelligence?

Human being has two capabilities that makes him uniquely intelligent:

• Learning
• Problem Solving

Any system with these two abilities can mimic the cognitive functions associated to human mind.
AI Applications

• Personalization
  • Recommendation
  • Online Advertising
  • Gmail auto-complete
  • ...

• Map Routing
• Autonomous Driving
• Medical Image Processing
• Banking Mortgage Approval

• Voice Assistance
  • Amazon Alexa
  • Apple Siri
  • Samsung Bixby
  • Text-2-Speech & Speech-2-Text

• Weather Forecast
• Auto Smile Photo Shooting
• Online Security Systems
• and many more...
Personalization
Recommendation
Example: Benefits of Recommender System

- **Netflix**: 2/3 of the movies watched are recommended
- **Google News**: recommendations generate 38% more click-through
- **Amazon**: 35% sales from recommendations
- **Choicestream**: 28% of the people would buy more music if they found out what they like.
Future of Advertising...

By Steven Spielberg

IMDb: 7.6 / 10
https://www.imdb.com/title/tt0181689/

If you have the PDF version, watch the video in the next slide below:
https://www.youtube.com/watch?v=7bXJ_obaiYQ
Categories in AI

CLASSICAL MACHINE LEARNING

SUPERVISED

Classification
- Divide the socks by color
- Divide the ties by length

Regression
- Predict a category

UNSUPERVISED

Clustering
- Split up similar clothing into stacks

Association
- Find what clothes I often wear together

Data is pre-categorized or numerical

Data is not labeled in any way

Predict a number

Divide by similarity

Identify sequences

Find hidden dependencies

Dimension reduction (generalization)
- Make the best outfits from the given clothes
Categories in AI

- Clustering
- Classification
- Regression
- Optimization
- Association
- Reinforcement Learning
Clustering (Unsupervised Learning)
Clustering
Categories in AI

- Clustering
- Classification
- Regression
- Optimization
- Association
- Reinforcement Learning
Classification (Supervised Learning)
Classification (Supervised Learning)
Categories in AI

- Clustering
- Classification
- Regression
- Optimization
- Association
- Reinforcement Learning
Regression
Regression

- Sale’s Prediction
- Weather Forecast
- Stock Exchange Prediction
- …
Regression

What is the temperature going to be tomorrow?

Classification

Will it be Cold or Hot tomorrow?
Categories in AI

- Clustering
- Classification
- Regression
- Optimization
- Association
- Reinforcement Learning
Optimization
Optimization
Categories in AI

- Clustering
- Classification
- Regression
- Optimization
- Association
- Reinforcement Learning
98% of people who purchased items A and B also purchased item C
Categories in AI

• Clustering
• Classification
• Regression
• Optimization
• Association
• Reinforcement Learning
Reinforcement Learning
Reinforcement Learning
Reinforcement Learning
Autonomous Self-Driving Cars
How to Learn Artificial Intelligence

Start with Math & Statistics

• *Math, Math, Math*

• *If you want to learn AI, and apply them efficiently, you need to be friend with “MATH”.*
How to Learn Artificial Intelligence

Programming Languages

- Intelligent system is nothing other than a software, therefore you need to learn computer programming.

- Today, the following programming languages are being used the most for Artificial Intelligence:
  - Python
  - Go! Lang
  - R
  - Julia
  - etc.
How to Learn Artificial Intelligence

Supplementary Tools

• **Database / Big Data**: Using data is inevitable in AI, so, the knowledge of database and SQL is mandatory.

• **AI / Stats / Math tools**: There are various tools that can be a help to implement intelligent systems:
  • Rapid Miner
  • Weka
  • SPSS
  • Matlab
Future of Artificial Intelligence

Artificial General Intelligence (AGI)

Having an intelligent system which can be suitable for anything and any purpose.

• Assistant Robots
Future of Artificial Intelligence

**Autonomous Driving**

Cars are becoming more and more intelligent to bring more comfort and safety.

- *Pedestrian Detection*
- *Intelligent Cruise Control*
- *Voice Assistance*
- *Auto Parallel Park*
Emotional Intelligence

Intelligent systems are becoming more emotional aware to interact with human being effectively.

They tend to understand you and your emotions and mimic a proper emotion in response.
AI can be FUN...
AI can become unethical and dangerous if it is trained and used for those purposes.
“Artificial Intelligence is a double-sided knife. It is up to you how to use it. To cook a delicious meal, or to threat and kill.”

– Kaveh Bakhtiyari
PAX Stress Resilience: Stress can take a toll on your health!

- Reduces the negative effects of stress in daily life and improves your coping capabilities
- Helps you to track your mood & stress and gives personalized recommendations for you

More information:
https://pax-web.interactivesystems.info/new_index.html

PAX Stress Resilience at Google Play Store:
Q&A