“Artificial Intelligence and Machine Learning ... will empower and improve every business, every government organization, every philanthropy ... 

… there is not an institution in the world that cannot be improved with Machine Learning.”
Stephen Hawking, Astrophysicist and Futurologist

“Success in creating AI could be the biggest event in the history of our civilization.

The genie is out of the bottle. We need to move forward on artificial intelligence development but we also need to be mindful of its very real dangers. I fear that AI may replace humans altogether.”

Artificial Intelligence

is the ability of machines to mimic human intelligence
Basic Intelligence

- Imagine
- Self-awareness
- Reflect
- Abstraction
- Intuition
- Conceptualize
- Creativity
- Solve Problems
- Plan
- Reason
- Think
- Observe
- Learn
- Decide

Data Patterns from Patterns from Learning

Is There a **Dog** in the Picture?

Source: Andreessen Horowitz
After analyzing 80,000 brushstrokes from 297 digitized sketches and drawings, an AI system was able to spot forged drawings in the style of Pablo Picasso, Henri Matisse, and Egon Schiele with 100% accuracy.

Source: Quartz/Artrendex/Rutgers University/The Hague)

Artificial Intelligence Helping the Vatican

53 miles (85 km) of old books in Vatican covering 12 centuries

Inaccessible to scholars worldwide

Handwritten script cannot be machine read

AI used to predict the text as data pattern

What is this ➔

anmo, aimo, aiiio, aiino, amio ?

Source: theatlantic.com
Artificial Intelligence Can Read Your Lips

University of Oxford’s Department of Computer Science – LipNet, GRID database
- AI accuracy = 93.4%, Human expert accuracy = 52.3%

Oxford’s Engineering Science and Google DeepMind – 100,000 video clips from BBC TV
- AI accuracy = 46.8%, Human expert accuracy = 12.4%
- Accuracy is lower, due to lighting, orientation, and greater language complexity

Our Face Says a Lot

- Identity
- Emotions
- Mood
- Health
- Orientation
- …
AI Automates Decision Making

Input Data → AI MACHINE → Predictions & Decisions

Expert Decision-Making Becomes Cheaper

You are Already Using Artificial Intelligence

- Google Search
- Amazon
- Apple Siri
- Google Map
- Alexa
- Google Assistant
- Google Translate
- Microsoft Cortana
- Facebook
- Google News
- Tesla
## More AI Applications …

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### How Does a Machine Learn?

... growing every day
Learning Techniques

**Assisted Learning**
Supervised Learning

**Self Learning**
Unsupervised Learning

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Alpha Zero “Destroys” Stockfish

Deep Mind’s Alpha Zero **learnt Chess in 4 hours**

“**Stockfish**” is the highest rated Chess Computer
Our Brain – A Network of Neurons

Deep Learning Neural Network

Translating AI into Business

Business is all about
Predictive Decision-Making

Stanford University Skin Cancer Diagnosis

AI outperformed expert dermatologists in diagnosis accuracy
Tesla – Autonomous Vehicles

Data is the fuel of AI
AI System = **Expert in a Black Box**

Input Data → ? → Predictions & Decisions

**Transparency**?  **Rationale**?

**Artificial Intelligence Levels**

- **Human Intelligence**
- **Artificial Narrow Intelligence**
- **Artificial General Intelligence**
- **Artificial Super Intelligence**

**Singularity**
Thanks

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http://www.ai-u.org/