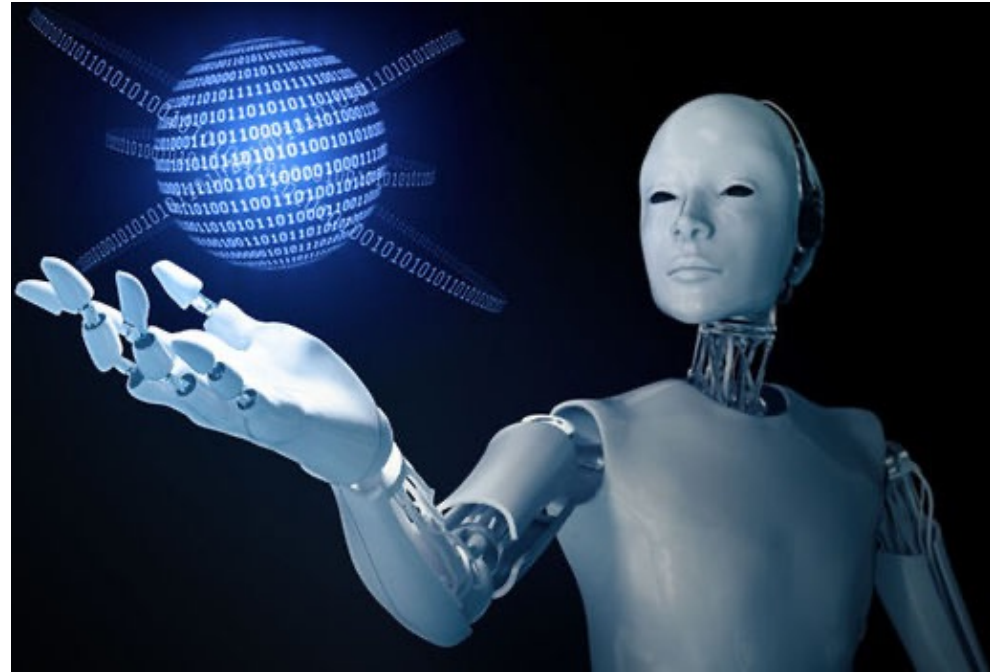# Examples

DeepMind AlphaGo AI Computer

Google's DeepMind AlphaGo AI computer beat world champion Lee Se-dol in 2016.

Speech Recognition

- Microsoft researchers achieve new conversational speech recognition milestone. (2016.10)
  - Dong Yu, Wayne Xiong, Jasha Droppo, Andreas Stolcke , Guoli Ye, Jinyu Li , Geoffrey Zweig, "Deep Convolutional Neural Networks with Layer-wise Context Expansion and Attention," Interspeech 2016
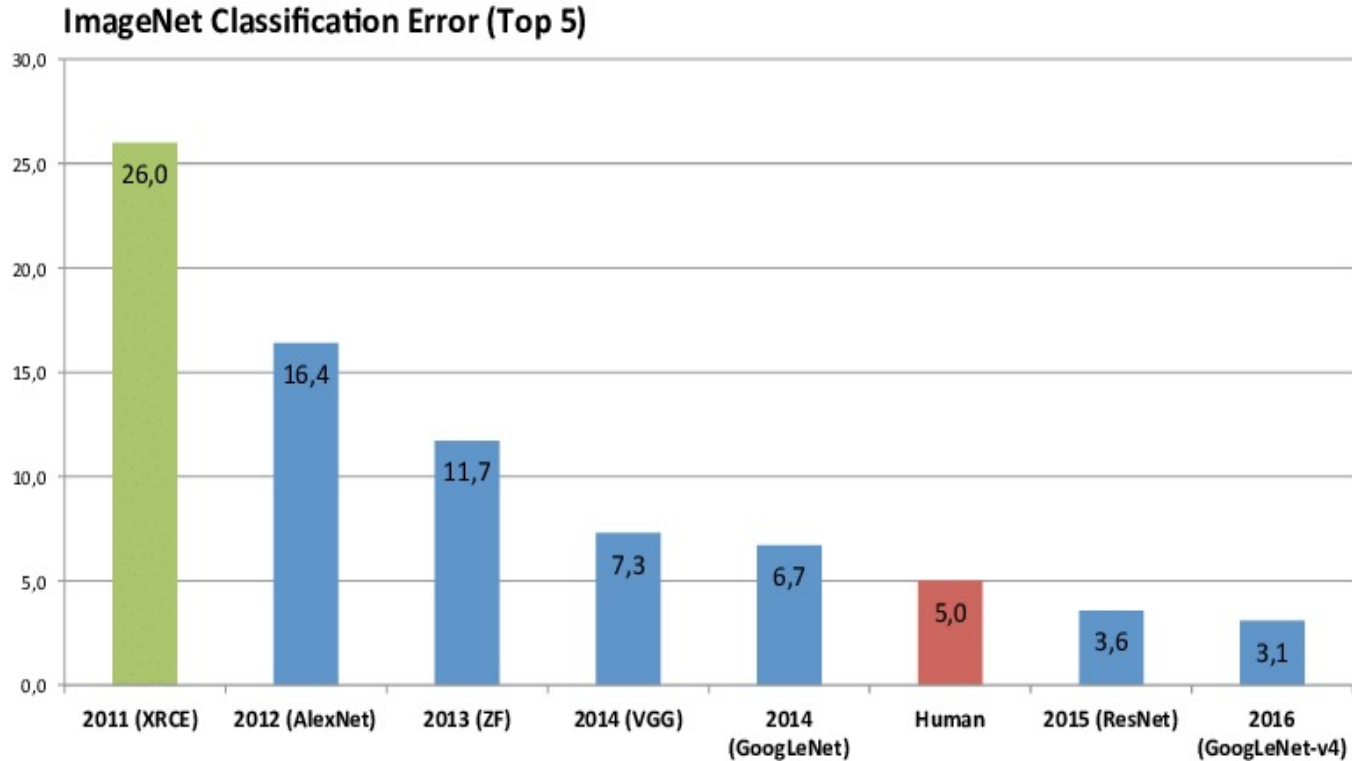
Machine 5.9% Versus Human 5.9%

- IBM vs Microsoft: 'Human parity' speech recognition record changes hands again. (2017.03)
  - George Saon, Gakuto Kurata, Tom Sercu, Kartik Audhkhasi, Samuel Thomas, Dimitrios Dimitriadis, Xiaodong Cui, Bhuvana Ramabhadran, Michael Picheny, Lynn-Li Lim, Bergul Roomi, Phil Hall, "English Conversational Telephone Speech Recognition by Humans and Machines," arXiv preprint, 2017

Machine 5.5% Versus Human 5.1%

Image Recognition

ImageNet Classification Error (Top 5)

Comprehension Ability

In meteorology, precipitation of any product of the condensation of atmospheric water vapor that falls under gravity. The main forms of precipitation include drizzle, rain, sleet, snow, graupel and hail...Precipitation forms as smaller droplets coalesce via collision with other rain drops or ice crystals within a cloud. Short, intense periods of rain in scattered locations are called "showers".

What causes precipitation to fall? Gravity

What is another main form of precipitation besides drizzle, rain, snow, sleet and hail? Graupel

Where do water droplets collide with ice crystals to form precipitation? Within a cloud

Rank	Model	EM	F1
	Human Performance *Stanford University* (Rajpurkar et al. '16)	82.304	91.221
1 Oct 05, 2018	BERT (ensemble) *Google AI Language* https://arxiv.org/abs/1810.04805	**87.433**	**93.160**
2 Oct 05, 2018	BERT (single model) *Google AI Language* https://arxiv.org/abs/1810.04805	85.083	91.835
2 Sep 09, 2018	nlnet (ensemble) *Microsoft Research Asia*	85.356	91.202
2 Sep 26, 2018	nlnet (ensemble) *Microsoft Research Asia*	85.954	91.677
3 Jul 11, 2018	QANet (ensemble) *Google Brain & CMU*	84.454	90.490
4 Jul 08, 2018	r-net (ensemble) *Microsoft Research Asia*	84.003	90.147
5 Mar 19, 2018	QANet (ensemble) *Google Brain & CMU*	83.877	89.737

Playing Games: Part I

AlphaGo–The movie

Playing Games: Part II

StarCraft II

Autopilot

References

- AlphaStar. (2019, January 24). AlphaStar: Mastering the real-time strategy game StarCraft II. *DeepMind*.

- Huang, X. (2017, August 20). Microsoft researchers achieve new conversational speech recognition milestone. *Microsoft Research Blog.*

- Martin, S. (2016, March 9). First step towards The Terminator becoming reality? AI beats champ of world's oldest game. *Express*.