How Ugly Can It Be?

On The Good, The Bad and The Ugly of AI for IoT and Sensor Network

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The First Burst: Emergence of the first-generation robot and intelligent software.

Stage I: Inference Period

- 1956: The First Burst: Emergence of the first-generation robot and intelligent software.
- 1957: Birth of Artificial Intelligence: Dartmouth Conference
- 1961: The first industrial robot Unimate was used in the production line of the General Motors Corporation.
- 1974: The First Winter: No confidence on development of AI, and no more research funding
- Early 1970s: Perceptron was first proposed
- 1973: The first humanoid robot wabot-1 was made in Japan, which can play music.

Stage II: Knowledge Period

- 1980: The Second Burst: Development of expert system and breakthrough of neural network
- 1986: Combination of multiple layer perceptron and back-propagation
- 1987: The Second Winter: Reduction of research funding due to lack of practical applications

Stage III: Learning Period

- 1993: The Third Burst: Development of big data and deep learning promotes the potential economic effect
- 1995: Adaptive boosting algorithm and support vector machines
- 2006: Neural network with deep learning capability
- 2013: Breakthrough of deep learning in voice and visual identification
- 1997: Deep Blue (chess computer) from IBM beat the human champion
- 2006: The intelligent robot NAO was developed
- 2013: Apple Siri; Google driverless car and Alpha Go, IBM Watson, Massive artificial intelligence applications in daily life

Challenges of AI for IoT

- **Completeness:** you don’t know what you don’t know
- **Robustness:** small changes to inputs, big changes to outputs
- **Efficiency:** finding the best model for a given architecture, fast
- **Adaptiveness:** updating the edge, on the fly