

# CS 4100/5100: Foundations of AI

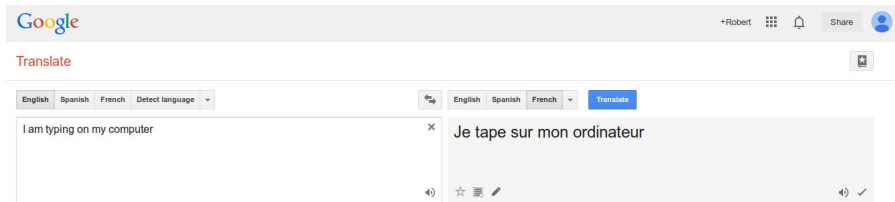
## AI Success Stories

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# Machine translation



The screenshot shows the Google Translate web interface. At the top, the Google logo is on the left, and user information (+Robert, a grid icon, a bell icon, a Share button, and a profile picture) is on the right. Below the logo, the word "Translate" is displayed in red. The main interface is divided into two sections. The left section has a language selector with "English", "Spanish", "French", and "Detect language" options. Below this is a text input box containing "I am typing on my computer". The right section has a language selector with "English", "Spanish", and "French" options, and a blue "Translate" button. Below this is a text output box containing the French translation "Je tape sur mon ordinateur". At the bottom of the output box, there are icons for a star, a list, and a pencil. On the far right of the output box, there are speaker and checkmark icons.

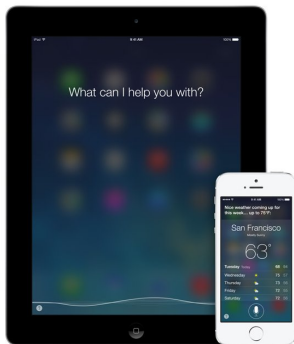
- ▶ works pretty well

# Speech to text



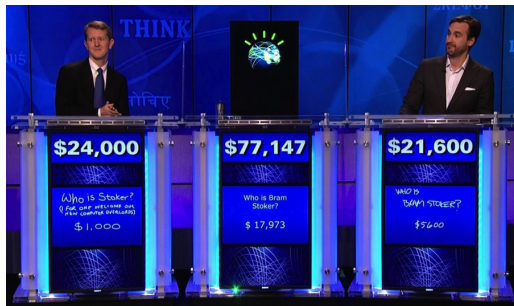
Siri.  
Your wish is  
its command.

Siri lets you use your voice to send messages, schedule meetings, place phone calls, and more. Ask Siri to do things just by talking the way you talk. Siri understands what you say, knows what you mean, and even talks back. Siri is so easy to use and does so much, you'll keep finding more and more ways to use it.



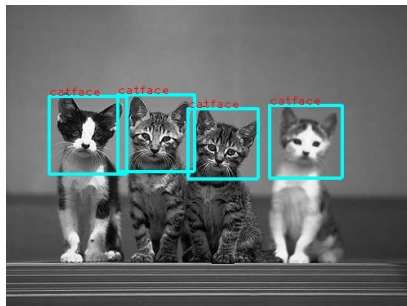
► works kind of well

# Question answering



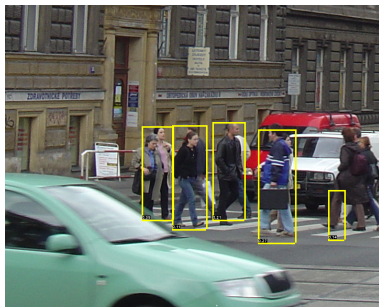
- ▶ 2011: beat the human world champions of the day

# Face detection



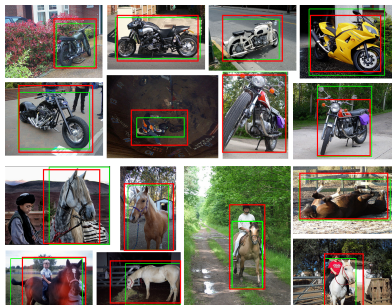
- ▶ Face detection used to be a really hard problem. Now, your phone does it...

# Person detection



- ▶ Person detection used to be a really hard problem...

# Object detection



- ▶ this used to be hard too...

# Stanley



- ▶ won the 2005 DARPA desert grand challenge
- ▶ drove 150 miles on roads in the Mojave desert autonomously
- ▶ key constituent technologies: machine learning, planning, vision, robotics

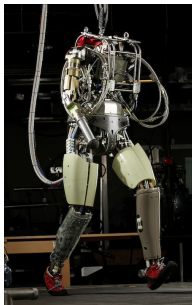


# Google self-driving car



- ▶ currently under development
- ▶ there's a big team at Google working on it right now.
- ▶ will it succeed? who knows!
- ▶ key constituent technologies: machine learning, planning, vision, robotics

# BDI Atlas



- ▶ <https://www.youtube.com/watch?v=mclbVTIYG8E>
- ▶ really impressive walking control

# Search/Planning



- ▶ 1996, 1997, Deep Blue and Garry Kasparov competed with each winning some games
- ▶ key constituent technologies: adversarial search, machine learning

## Other success stories

- ▶ airline routing
- ▶ map route planning
- ▶ medical diagnosis
- ▶ web search
- ▶ spam classification
- ▶ fraud detection
- ▶ ad placement/marketing