Importance of processing / understanding language:

Huge amounts of text available all around us:
* News articles
* Books
* Scientific papers
* Webpages
* Wikipedia
* Social Media text
* Legal documents, contracts,

….

….

Different texts have different properties (structured / unstructured), come in different languages

NLP tasks are ongoing all around us

* Grammar checking of text

* Web Search - understanding user-query, whether a document matches a query

* Translation from one language to another

* Auto-completion of text when using smartphones, web-search

* Summarization (https://inshorts.com/)

* Classification, clustering of text documents

What is NLP?

Fundamental and Scientific Goal

Deep understanding of *broad* language

Engineering Goal

Design, implement, and test systems that process natural languages for practical applications

Goals can be very ambitious: Good quality translation

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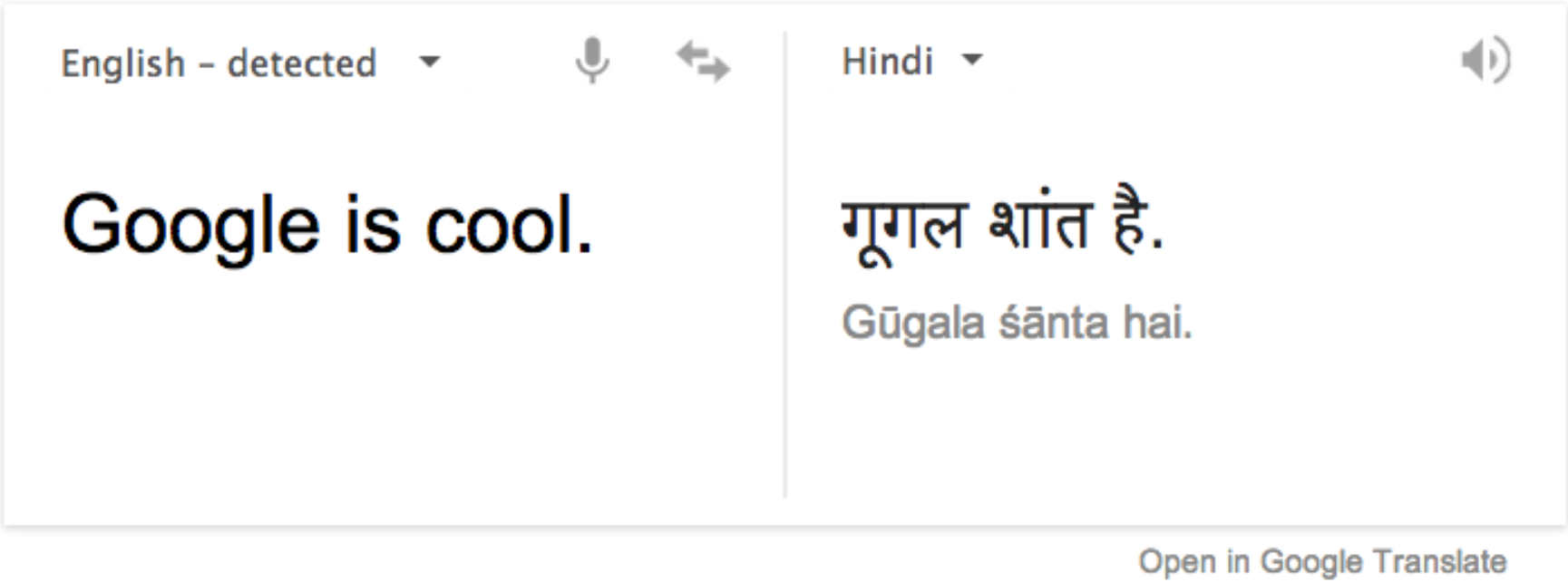

Examples may give different results now, since systems evolve

Well, even humans have made blunders

Pepsi Chinese blunder

"Come alive with the Pepsi Generation", when translated into Chinese meant, "Pepsi brings your relatives back from the dead."

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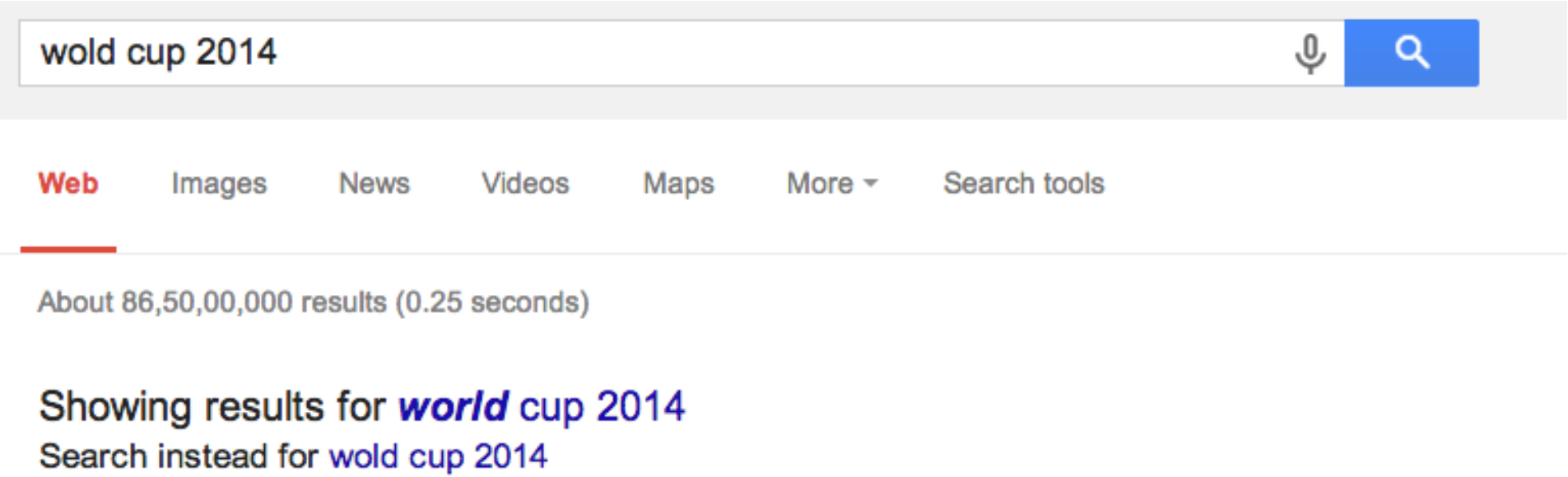
KFC's Chinese blunder

KFC's slogan, "Finger lickin' good", when translated into Chinese meant "We'll eat your fingers off."

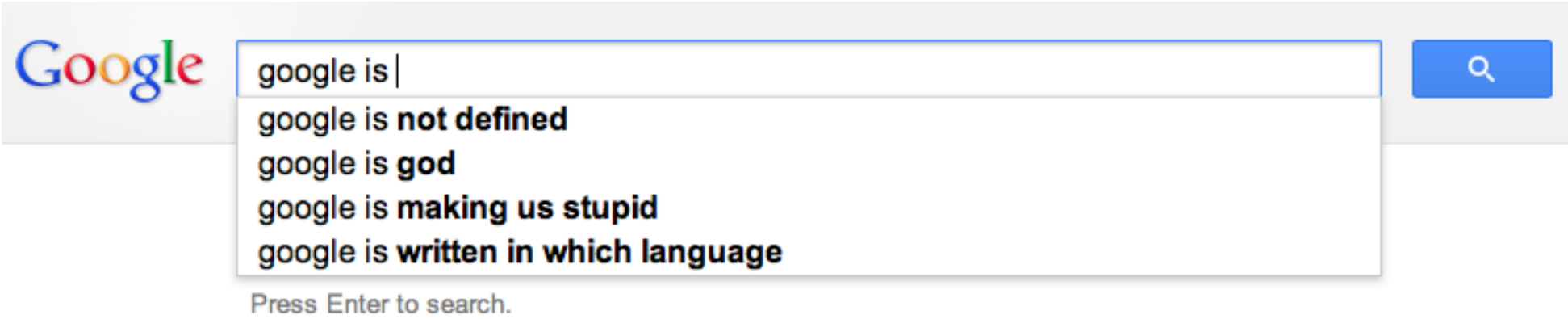
Goals can be very ambitious: Open Domain Chatbots

Microsoft's bot Tay had to be taken down in a day since it started racist comments

And Goals Can be Practical: Auto Completion



And Goals can be Practical: Search Engines



And Goals can be Practical: Information Extraction

Extract entities and the relations among them, from text

New York Times Co. named Russell T. Lewis, 45, president and general manager of its flagship New York Times newspaper, responsible for all business-side activities. He was executive vice president and deputy general manager. He succeeds Lance R. Primis, who in September was named president and chief operating officer of the parent.

Person	Company	Post	State
Russell T. Lewis	New York Times newspaper	president and general manager	start
Russell T. Lewis	New York Times newspaper	executive vice president	end
Lance R. Primis	New York Times Co.	president and CEO	start

And Goals can be Practical: Domain-specific Chatbots

Computer science class fails to notice their TA was actually an AI chatbot

by NAPIER LOPEZ — 9 weeks ago in SHAREABLES

And Goals can be Practical: Domain-specific Chatbots

Jill wasn't very good for the first few weeks after she started in January, often giving odd and irrelevant answers. Her responses were posted in a forum that wasn't visible to students.

"Initially her answers weren't good enough because she would get stuck on keywords," said Lalith Polepeddi, one of the graduate students who co-developed the virtual TA. "For example, a student asked about organizing a meet-up to go over video lessons with others, and Jill gave an answer referencing a textbook that could supplement the video lessons — same keywords — but different context. So we learned from mistakes like this one, and gradually made Jill smarter."

After some tinkering by the research team, Jill found her groove and soon was answering questions with 97 percent certainty. When she did, the human TAs would upload her responses to the students. By the end of March, Jill didn't need any assistance: She wrote the class directly if she was 97 percent positive her answer was correct.

[1]

[1] http://www.news.gatech.edu/2016/05/09/artificial-intelligence-course-creates-ai-teaching-assist

Open-domain chatbots are still challenging to develop

But domain-specific chatbots are now successfully deployed in various domains such as e-commerce, banking system, flight booking systems, etc.

And Goals can be Practical: Sentiment Analysis

Other Goals

- Spam detection
- Machine Translation services on the Web
- Text Summarization
- . . .

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Natural Language Technology not yet perfect

But still good enough for several useful applications