



# SINGULARITIES

“Inteligencia artificial, mitos y realidades locales”

Understanding a Person

Dr. Carlos Araya

April 20<sup>th</sup>, 2017

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## Computerizable Jobs

Select occupations ranked according to their probability of becoming automatable.

Position	Probability of automation
Loan Officers	98%
Receptionists and Information Clerks	96%
Paralegals and Legal Assistants	94%
Retail Salespersons	92%
Taxi Drivers and Chauffeurs	89%
Security Guards	84%
Cooks, Fast Food	81%
Bartenders	77%
Personal Financial Advisors	58%
Computer Programmers	48%
Reporters and Correspondents	11%
Musicians and Singers	7.4%
Lawyers	3.5%
Elementary School Teachers	0.4%
Physicians and Surgeons	0.4%

## Inside Health Care

Even within the health care industry, some roles are more susceptible to automation than others.

Dietitians	Epidemiologists	Medical secretaries	Medical records technicians
<b>0.4%</b>	<b>20%</b>	<b>81%</b>	<b>91%</b>

Bloomberg News and Dave Merrill

## Bottlenecks to Computers

Machines are unable to match humans in tasks that require social and creative skills and in jobs that require dexterity or getting into cramped spaces. Some examples of occupations that have low probabilities of automation in the near future.

### 1. Manipulation



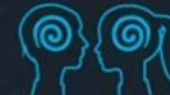
Oral surgeons	0.36%
Makeup artists	1%
Chiropractors	2.7%
Fire fighters	17%

### 2. Creativity



Choreographers	0.4%
Curators	0.7%
Art directors	2.3%

### 3. Social Perception

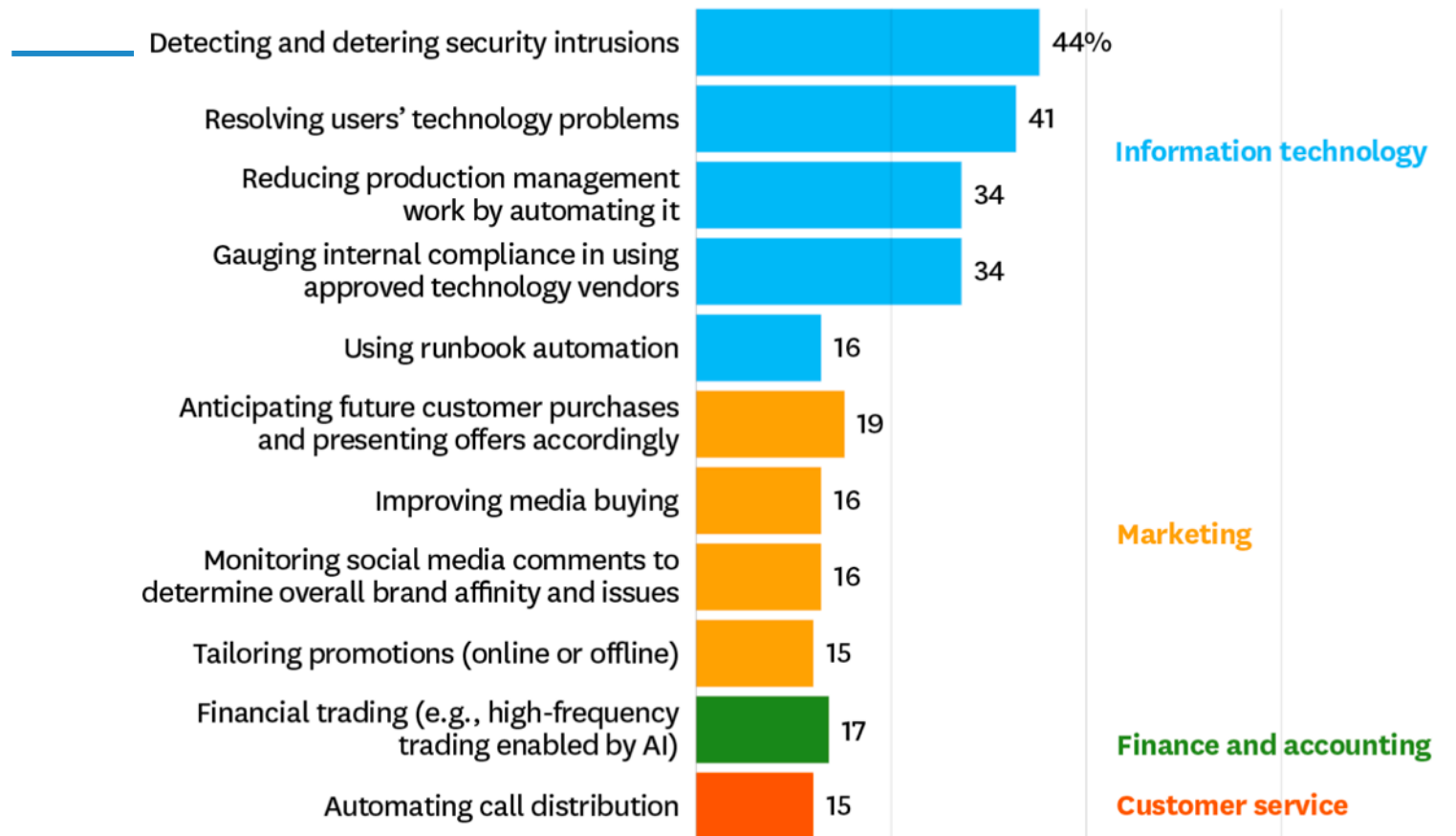


Mental health workers	0.3%
Clergy	0.8%
Nurses	0.9%
Coaches and scouts	1.3%

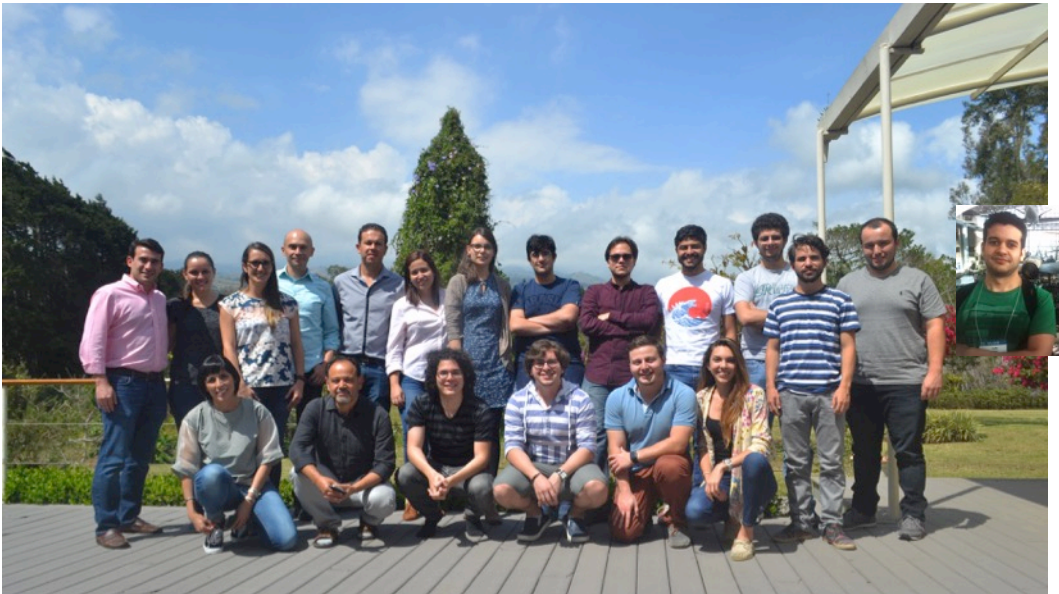


## How Companies Around the World Are Using Artificial Intelligence

IT activities are the most popular.



# Singularities



Founded in 2014 by Artificial Intelligence, Information Mining and Learning Technology experts

Based in California, Costa Rica and the United Kingdom

Led by its Founder and CEO, Carlos Araya, PhD, Singularities has entered the AI global space with its state-of-the-art **Reasoning** technology



# Mission

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To provide the most accurate, insightful, ease to use, and  
autonomous technology  
for **modeling, understanding, and reasoning**  
*about*  
**individual subjects**,  
**beliefs, behaviors, interests and opinions** for business  
applications



# Singularities Solutions

**AI  
INNOVATIONLAB**

**ALEPH<sup>TM</sup>SDK**  
software development  
platform

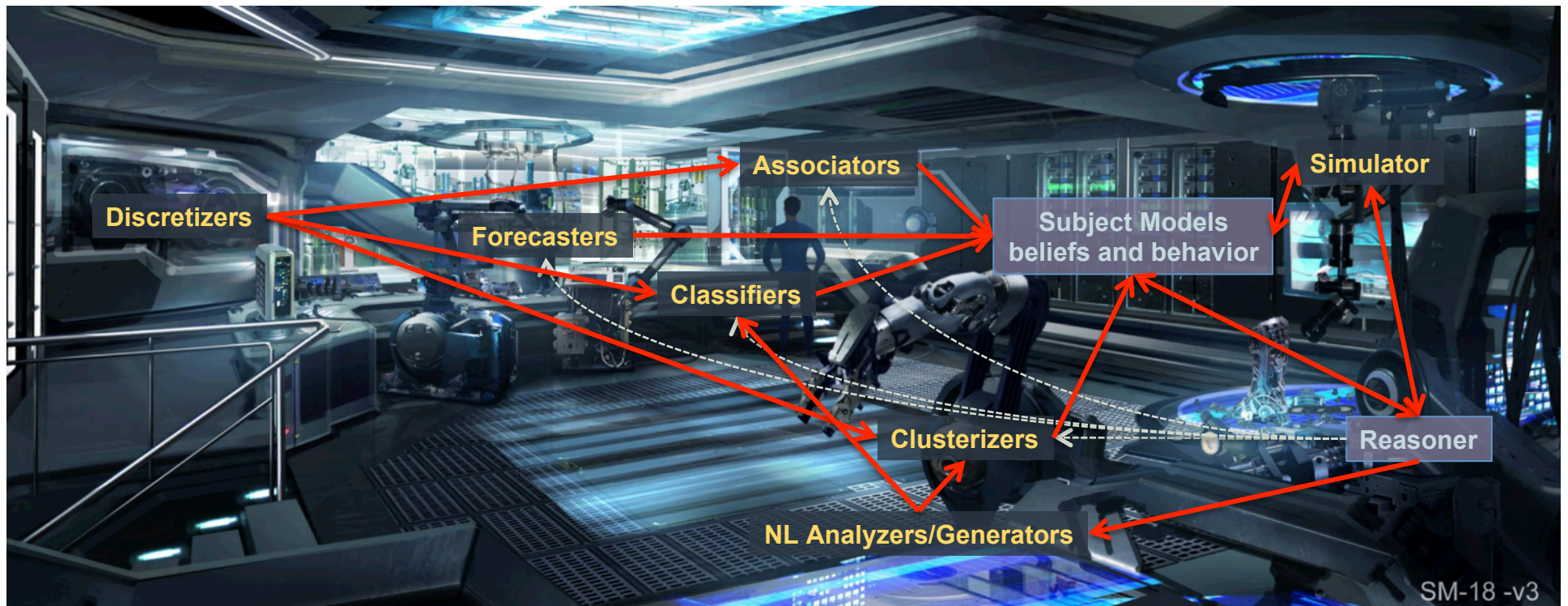
**ALEPHREASONER**  
for Business Analysts

UI UX

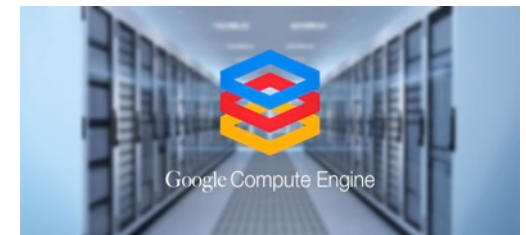
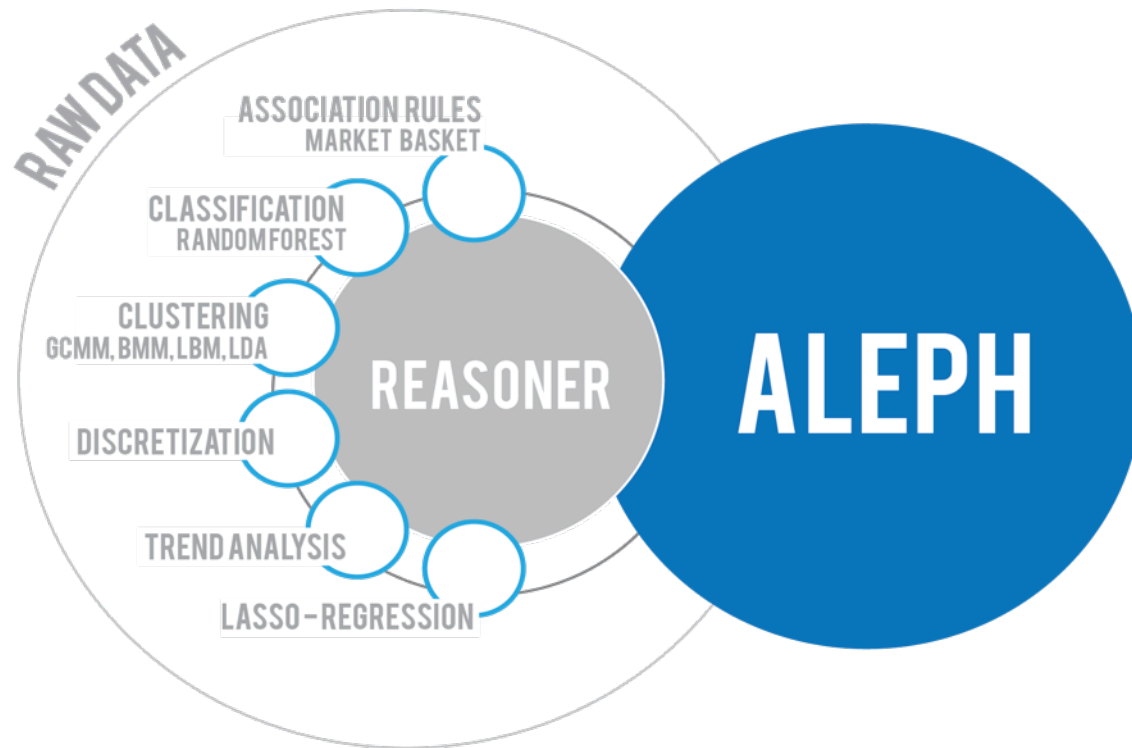




# AI Innovation Lab



# Beyond Machine Learning



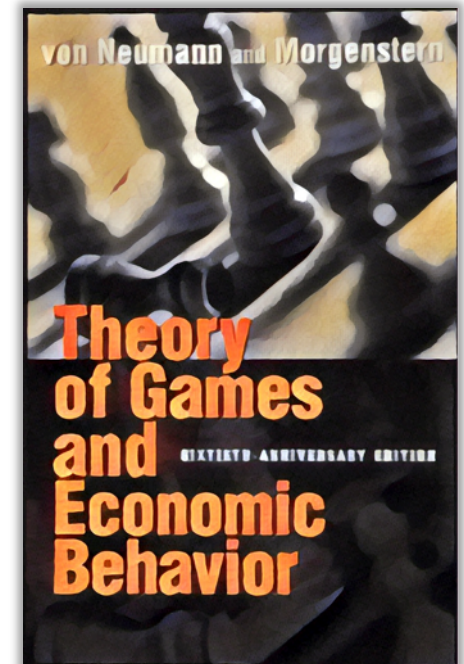
\* Forthcoming Azure and AWS





# From Rational Choice Theory to Formal IA

Von Newman & Oskar Morgenstern



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# From Rational Choice and Market Equilibrium to ...

But,

Humans have limited time and brainpower

⇒ Hindsight  
bias

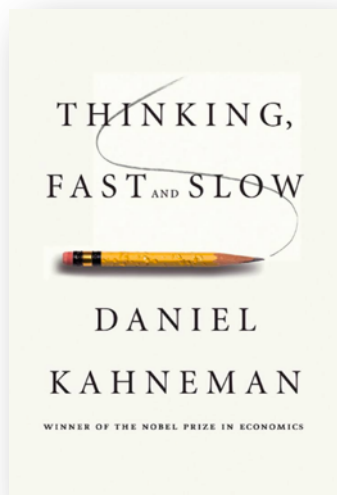
⇒ Endowment  
effect

⇒ Availability  
bias

⇒ Mental  
accounting

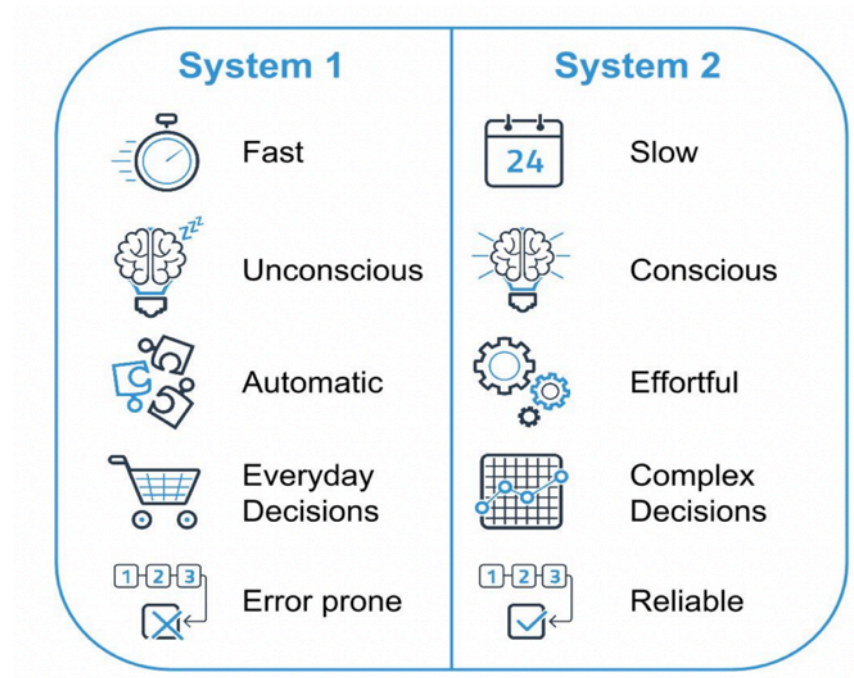
These heuristics (and several others) causes people to make predictable mistakes!

Behavioral Economics is born



# “Thinking Fast, and Slow” Daniel Kahneman

By learning



By reasoning

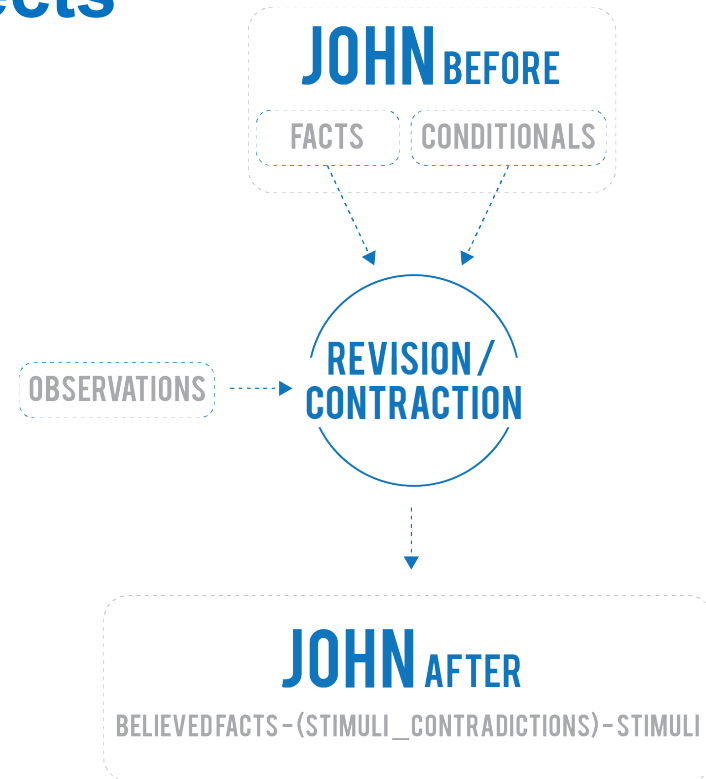
<http://www.cityfloodmap.com/2015/11/thinking-fast-and-slow-about-extreme.html>



# Reasoning Artificial Subjects

Artificial Subjects modeled with  
Mathematical Systems Equations

- Singular
- Adaptive
- What-if
- Explainable
- Accountable
- Reflexible and interdependent: negotiating
- Autonomous
- Tractable
- Optimizable



# Main applications

- Services/Fintech
- Retail
- Manufacturing
- Agriculture

Harvard  
Business  
Review

ANALYTICS

## How to Make Your Company Machine Learning Ready

by James Hodson

NOVEMBER 07, 2016



# How to ...

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1. Catalogue your business processes
2. Focus on simple problems
3. Don't use machine learning where standard business logic will suffice
4. If a process is complicated, use it to create decision support systems

Over the next five to 10 years, the biggest business gains will likely stem from getting the right information to the right people at the right time. Building upon the business

Harvard  
Business  
Review

ANALYTICS

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# On Natural Language Understanding

“Facebook’s M Chatboot is so smart because it cheats. It works like Siri in that when you tap out a message to M, algorithms try to figure out what you want. When they can’t, though, M doesn’t fall back on searching the Web or saying “I’m sorry, I don’t understand the question.” Instead, a human being invisibly takes over, responding to your request as if the algorithms were still at the helm... “

*MIT Tech Review, April 14, 2017*



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# Why reasoning

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“The most recent major progress in AI has been in deep learning, a powerful method but one that must be applied in a customized way for each application. To foreshadow a point I will make below, it is notable that the recent advances in deep learning built on research on neural nets by university labs which was largely funded by the Defense Advanced Research Projects Agency (DARPA) and other government agencies in the 1980s and 1990s. Even though we have not made as much progress recently on other areas of AI, such as logical reasoning, the advancements in deep learning techniques may ultimately act as at least a partial substitute for these other areas.”

”

*Is This Time Different? The Opportunities and Challenges of Artificial Intelligence*, Jason Furman,  
Chairman, Council of Economic Advisers, Jul 7, 2016



# What is different with Singularities? Reasoning!

When something that it has not been explicitly told how to do, **reasoning** is required - it must figure out what it needs to know from what it already knows

It goes beyond Machine Learning, **Reasoning** for exploratory, explanatory, argumentative purposes



Totally focused on modeling and understanding **Individual Subjects**, a **Human-centered** approach



Based on **Theory-of-Mind** paradigm (a perception of other people's beliefs and behaviors)



Built upon Mathematical Systems of Equations



**Adaptive reasoning** – only known industrial system that reasons on change according to what philosophers/epistemologist prescribe for rational subjects (**AGM** postulates)



# Thank you

