Machine Learning Meets Public Policy

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STATES A
1775

BOUNDLESS Qualcomm

THE HILL

Elon Musk: We need to regulate AI before 'it's too late'

BY ALI BRELAND - 07/17/17 12:23 PM EDT

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TECHNOLOGY

How the Enlightenment Ends

Philosophically, intellectually—in every way—human society is unprepared for the rise of artificial intelligence.

HENRY A. KISSINGER JUNE 2018 ISSUE

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Should the Government Regulate Artificial Intelligence?

As AI makes more consequential decisions, should the government set limits? Three experts debate.

MR. CALO: One of the ironies of artificial intelligence is that proponents often make two contradictory claims. They say artificial intelligence is going to change everything, but there should be no changes to law or legal institutions in response. That doesn't make sense to me.

"AI is probably the most important thing humanity has ever worked on. I think of it as something more profound than electricity or fire."

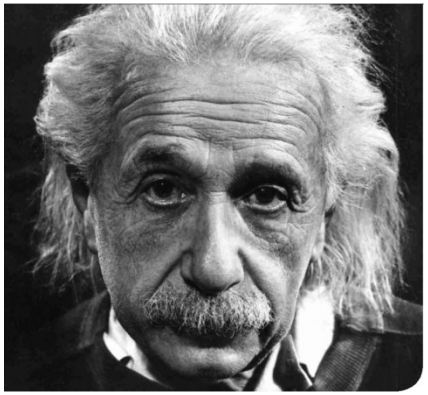
Sundar Pichai, Google CEO

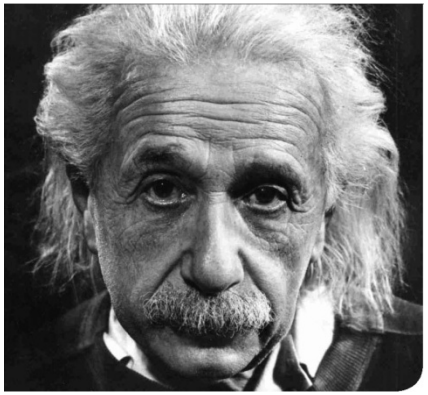
24 Jan 2018

People who are affected by AI/ML deserve some say in how it is used.

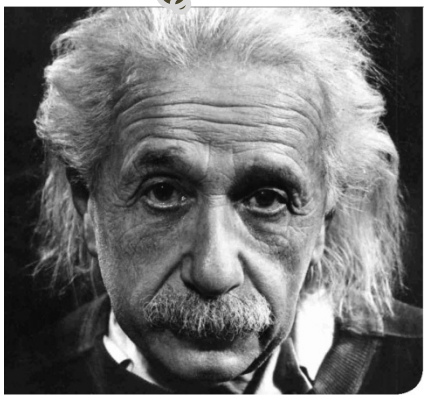
Decisions will be made.

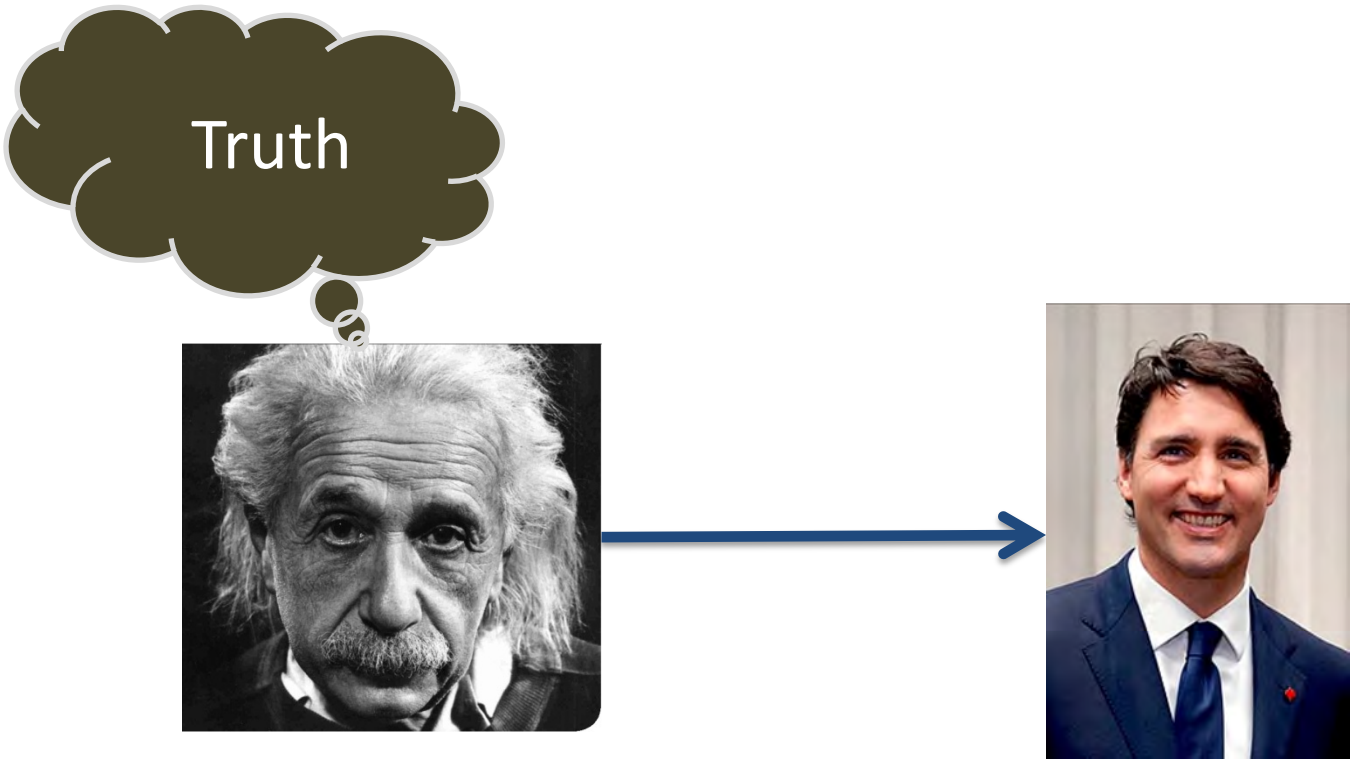
What is our role in the decisions?





Truth




Truth

Politics is not a search for truth.

a feature, not a bug

Democracy is not a search for truth.

an algorithm for resolving disagreements

no question is undecidable

all questions are decidable in O(1) time

no need to decide underlying facts

no need for a coherent explanation

and yet …

individual legislators seem

individual legislators seem

logically inconsistent

individual legislators seem

logically inconsistent

indifferent to truth

Politicians behave that way for a reason.

Consider the following model …

P = universe of proposals = $\{p_0, p_1, p_2, \ldots\}$

Assume proposals are independent.

A bill is a subset of P.

Voter i has utility function $U_i(.)$

Voter v_i supports proposal p_j iff $U_i(p_j) > 0$

Define: p_j passes iff

majority of voters support p_j

Assumption:

Given two disjoint bills B_1, B_2:

$$U_i(B_1 \cup B_2) = U_i(B_1) + U_i(B_2)$$

Corollary:

Given two disjoint bills B_1, B_2:

If V_i supports B_1 and V_i supports B_2,
Then V_i supports $B_1 \cup B_2$

Theorem:

Given two disjoint bills B_1, B_2:

If B_1 passes and B_2 passes,

Then $B_1 \cup B_2$ passes

Non-Theorem:

Given two disjoint bills B_1, B_2:

If B_1 passes and B_2 passes,

Then $B_1 \cup B_2$ passes

Voter	B_1	B_2	$B_1 \cup B_2$
Alice	1	-2	-1
Bob	-2	1	-1
Charlie	1	1	2

outputs not logically consistent

Let’s generalize the model …

partition voters into districts

partition voters into districts

legislature: one rep per district

partition voters into districts

legislature: one rep per district

rep supports B iff
majority of constituents support B

implications

legislator not logically consistent

legislator not logically consistent

supports B_1, supports B_2

legislator not logically consistent

supports B_1, supports B_2

might not support B_1 U B_2

legislator doesn’t care about the facts

individual legislators seem

logically inconsistent

indifferent to truth

legislative strategy

Consider the following problem…

Amendment Problem

Given:

bill B

amendments A_1, …, A_n

(mutually disjoint)

Can you add a subset of the A_i to B,

to make an amended proposal that will pass?

Amendment Problem

Given:

bill B

amendments A_1, …, A_n

(mutually disjoint)

NP-complete!

Can you add a subset of the A_i to B,

to make an amended proposal that will pass?

Nobody knew this could be so complicated.

real world: even more complicated

voters not self-consistent

legislators make deals

administrative agencies

indirectly accountable to voters

locally, system will look irrational

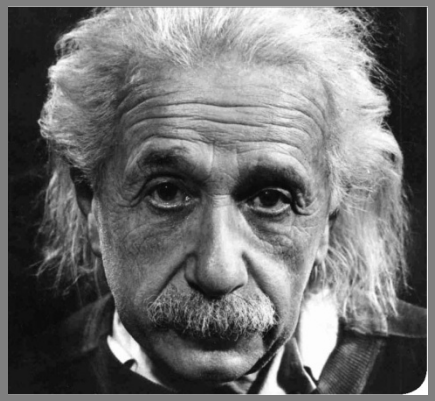
It’s complicated.

what to do?

“It’s not okay to not know how the Internet works.”

“It’s not okay to not know how government works.”

good decisions



just the facts

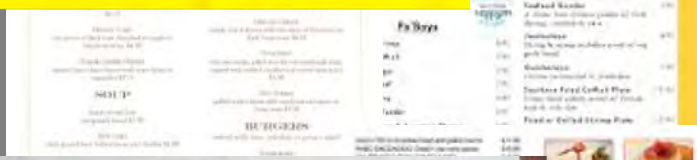
Salute Kosher Restaurant
L'EXPRESS
BREAKFAST
AVAILABLE 24/7
APPETIZERS
LUNCH
SANDWICHES
ENTREES
SIX-FRIED NOODLE/RICE NOODLES
NOODLE/RICE NOODLES SOUP
RICE PLATE
DESSERT
SOUP
BURGERS
Abuela's
ESPECIALES DEL DIA/DAILY SPECIAL

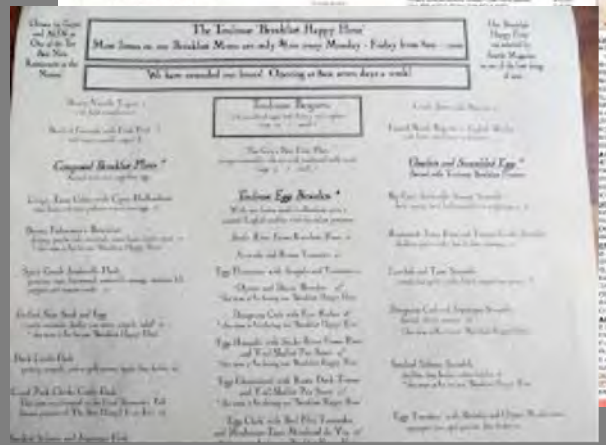
Salute Kosher Restaurant

EXPRESS
BREAKFAST
EXPRESS
AVAILABLE 24/7
APPETIZERS
EXPRESS
LUNCH

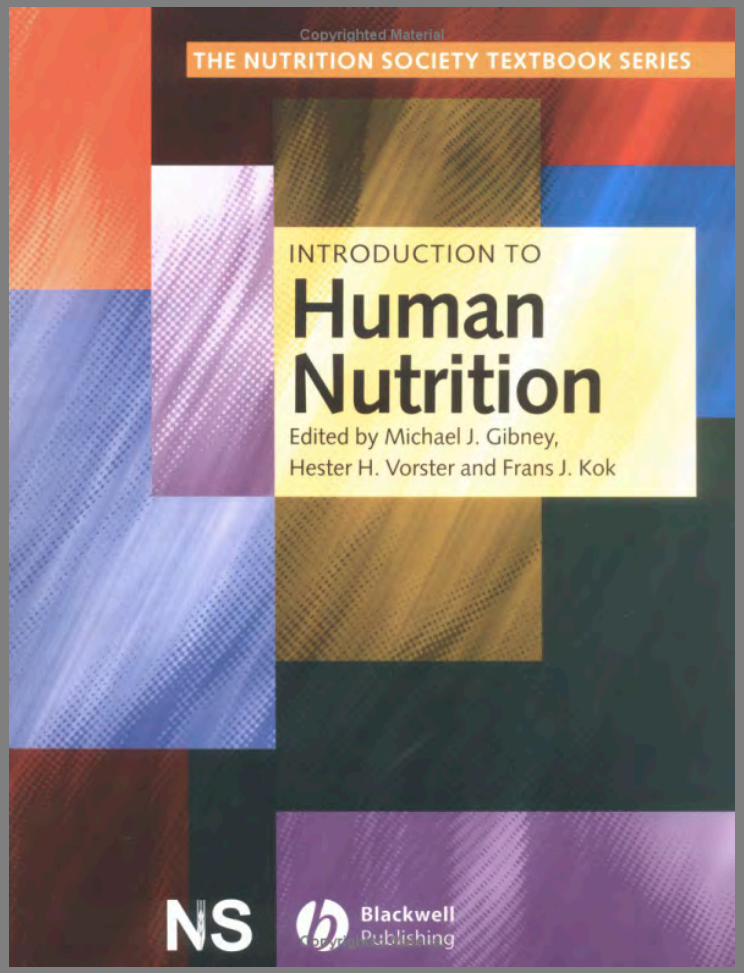
SANDWICHES

DESSERT





Abuela's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dictate the decision

Who elected you?

download your brain

be useful

your knowledge

+

their preferences

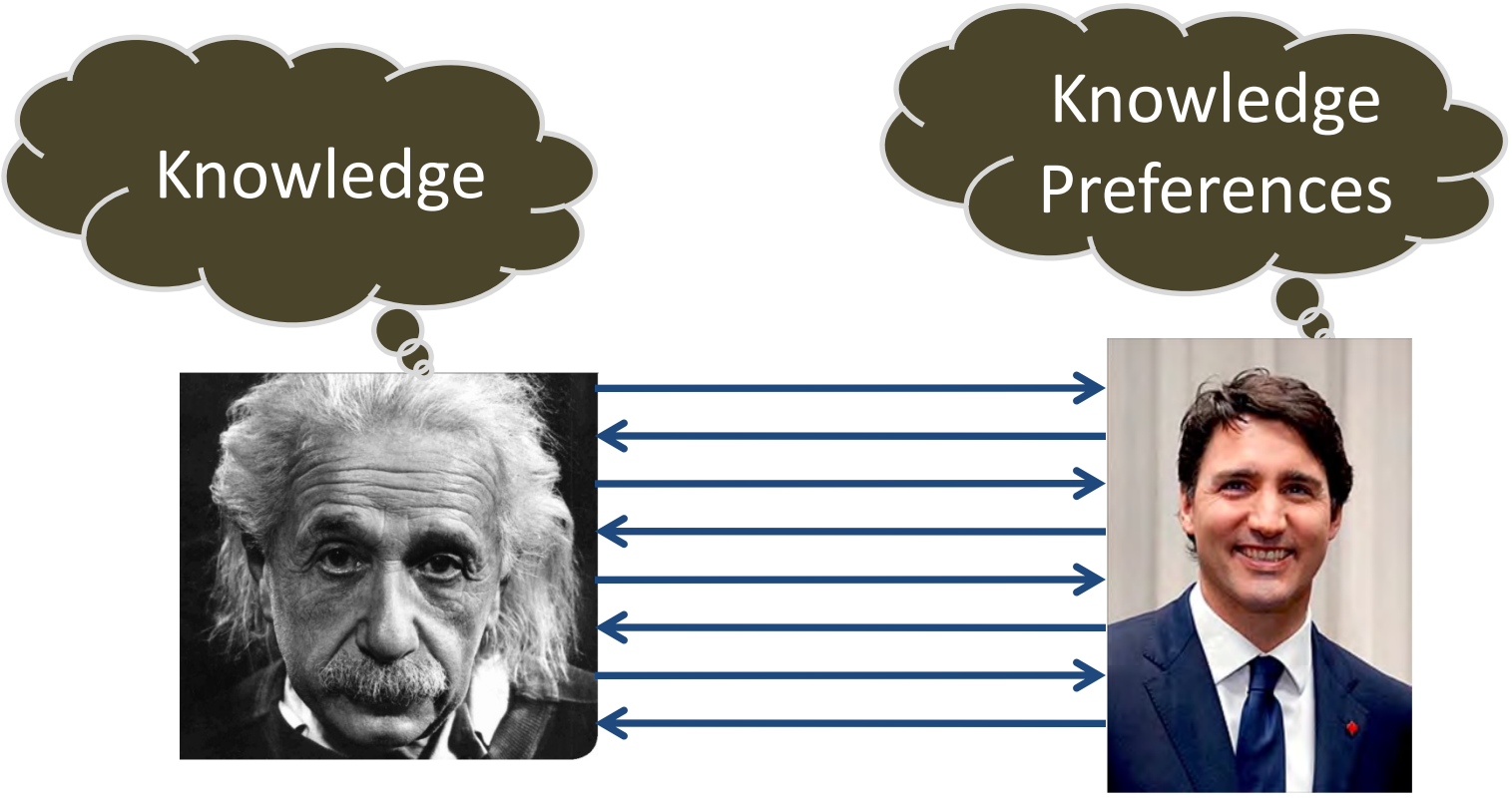
your knowledge

+

their knowledge and preferences

get their knowledge and preferences

structure the decision space


Knowledge
Knowledge
Preferences

engagement over time

mutual trust

role of our community

need boots on the ground

create a career path

build incentives

This is important!

We need to be in the room.

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