

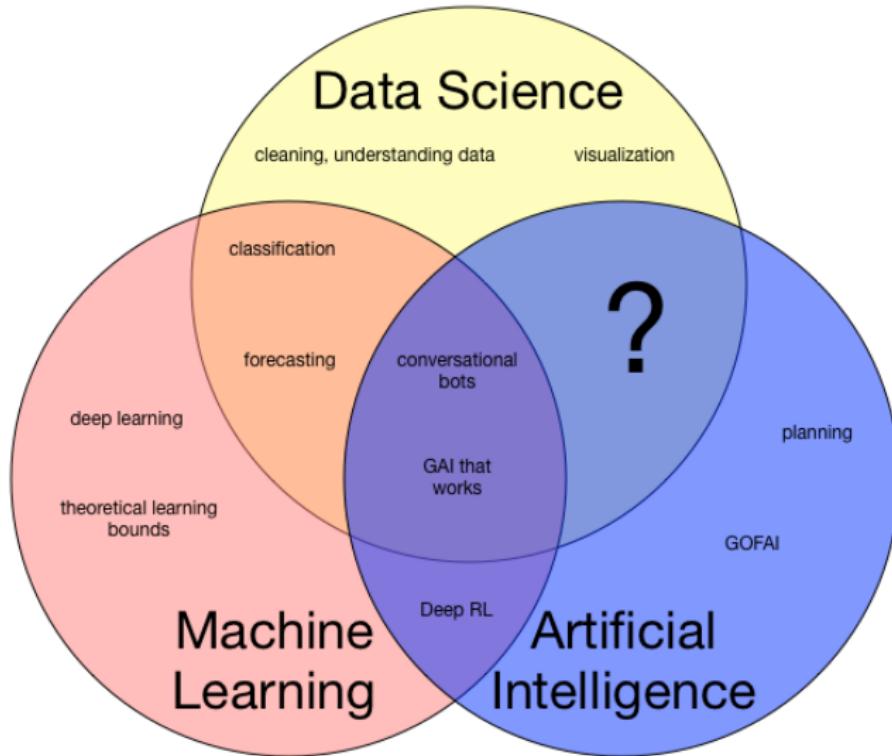


Definitions: AI, ML, DS

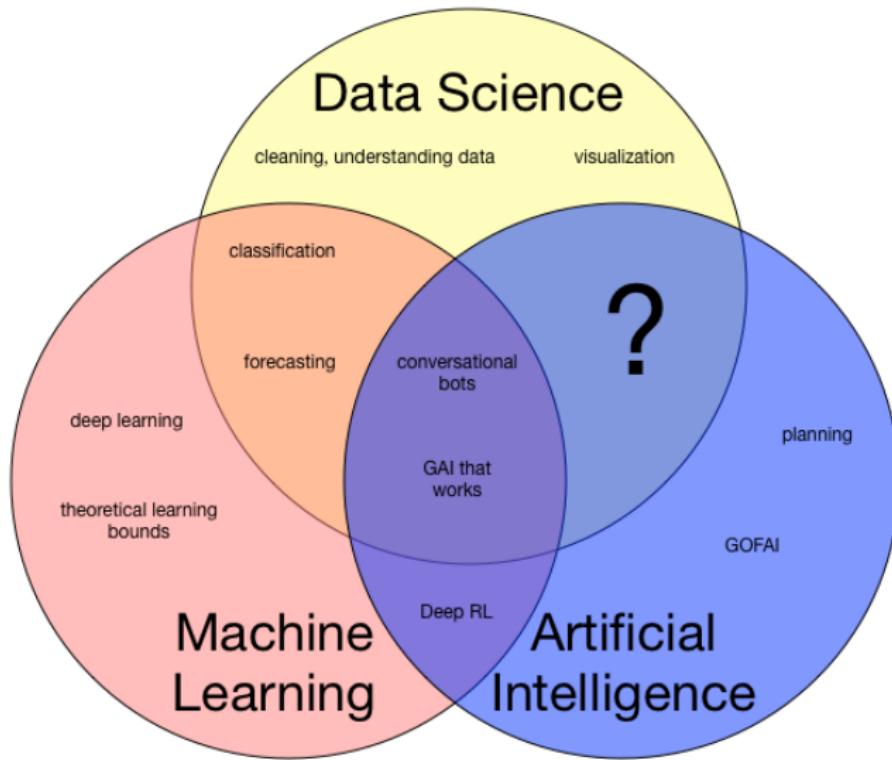
Jordan Boyd-Graber
University of Maryland
JANUARY 17, 2018

Roadmap

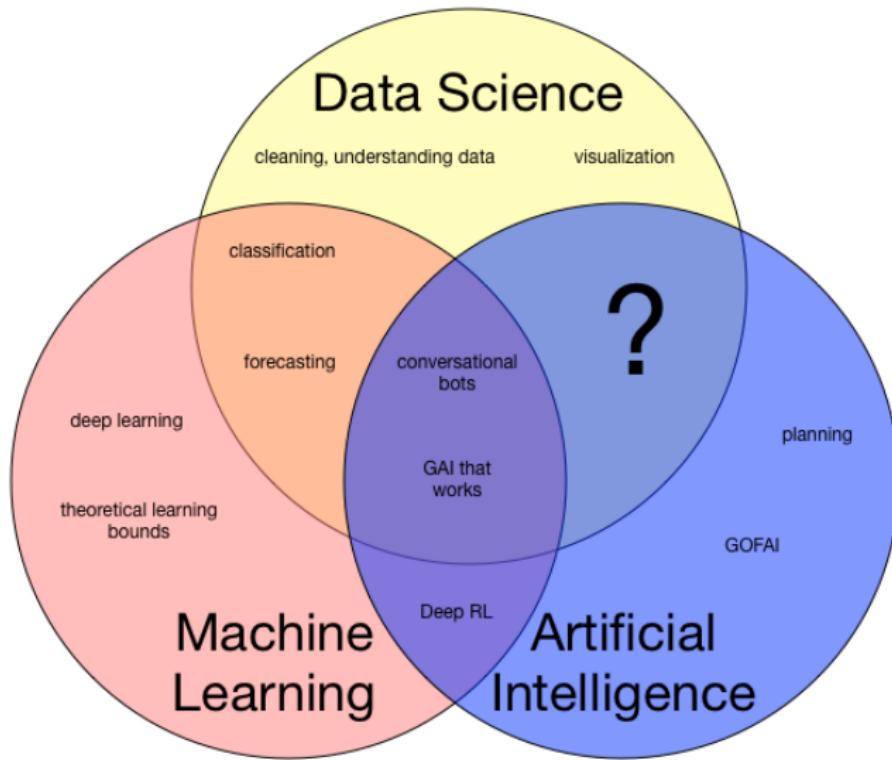
- What is data science / artificial intelligence / machine learning?
- What is possible with these new tools and techniques?
- What are the challenges?



Data provides the foundation



Machine learning provides algorithms



Artificial intelligence defines problems



Nowhere near true AI

Data are everywhere.

Ikiru (1952)	UR	Foreign			
Junebug (2005)	R	Independent			
La Cage aux Folles (1979)	R	Comedy			
The Life Aquatic with Steve Zissou (2004)	R	Comedy			
Lock, Stock and Two Smoking Barrels (1998)	R	Action & Adventure			
Lost in Translation (2003)	R	Drama			
Love and Death (1975)	PG	Comedy			
The Manchurian Candidate (1962)	PG-13	Classics			
Memento (2000)	R	Thrillers			
Midnight Cowboy (1969)	R	Classics			

User ratings

0.5/0.51 lb	Cheese			
	Cabot Vermont Cheddar	0.51 lb	\$7.99/lb	\$4.07
Dairy				
1/1	Friendship Lowfat Cottage Cheese (16oz)		\$2.89/ea	\$2.89
1/1	Nature's Yoke Grade A Jumbo Brown Eggs (1 dozen)		\$1.49/ea	\$1.49
1/1	Santa Barbara Hot Salsa, Fresh (16oz)		\$2.69/ea	\$2.69
1/1	Stonyfield Farm Organic Lowfat Plain Yogurt (32oz)		\$3.59/ea	\$3.59
Fruit				
3/3	Anjou Pears (Farm Fresh, Med)	1.76 lb	\$2.49/lb	\$4.38
2/2	Cantaloupe (Farm Fresh, Med)		\$2.00/ea	\$4.00
Grocery				
1/1	Fantastic World Foods Organic Whole Wheat Couscous (12oz)		\$1.99/ea	\$1.99
1/1	Garden of Eatin' Blue Corn Chips (9oz)		\$2.49/ea	\$2.49
1/1	Goya Low Sodium Chickpeas (15.5oz)		\$0.89/ea	\$0.89
2/2	Marcal 2-Ply Paper Towels, 90ct (1ea)		\$1.09/ea	\$2.18 T
1/1	Muir Glen Organic Tomato Paste (6oz)		\$0.99/ea	\$0.99
1/1	Starkist Solid White Albacore Tuna in Spring Water (6oz)		\$1.89/ea	\$1.89

Purchases

SCIENCE:

A WEEKLY RECORD OF SCIENTIFIC PROGRESS.

ILLUSTRATED.

VOLUME I
JULY TO DECEMBER.

EDITED BY JOHN MICHELS

PUBLISHED AT 229 BROADWAY,
NEW YORK.
1881.



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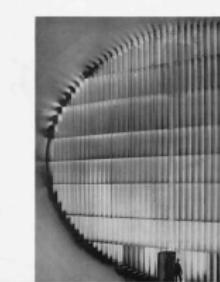
A WEEKLY JOURNAL
DEVOTED TO THE ADVANCEMENT OF SCIENCE

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NEW SERIES VOLUME XI
JANUARY-JUNE, 1890.

NEW YORK
THE MACMILLAN COMPANY
1890

SCIENCE
AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



SCIENCE

Published by the
AMERICAN ASSOCIATION
FOR THE
ADVANCEMENT
OF SCIENCE



Index to Volume 111
January-June 1950



SCIENCE



12 February 1962 • Vol. 131 • No. 3401

SCIENCE

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE



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FEBRUARY 14, 1962

WILLIAM JAMES

TODAY the name William James only brings up his writings most have heard all too little to surprise to learn that he had all but forgotten him. It is not surprising, either, that he had for many years now made no contribution to psychology. He had finally left his field for us. For during the last two decades of his life his most telling writings were not of the spirit and vigor of his earlier days, but of the quiet, thoughtful, and infinitely thoughtful kind.

Three years ago, as all his readers know, he died at the age of 88, after a period of mental and physical decline, and it is not surprising that his death was not noticed more than the endearing period of his life. His name was not lost when he added them to his other academic society books and papers.

It must be remembered that he made his greatest contributions in his middle years. He was still a young man in his thirties when he began his scientific expeditions. He was still a young man in his forties when he founded the Harvard School, and shortly after devoted most of his time to the study of psychology.

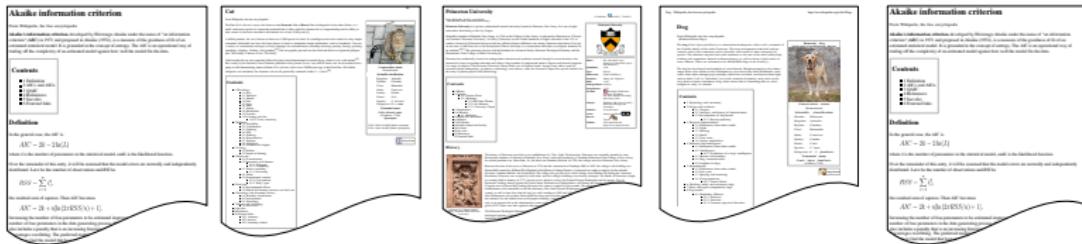
And it was in connection with his educational studies that we first have information about him.

He was a man of great ability in the nature of the mental changes that affected him, and in his ability to analyze psychological changes, such as those on contact and before, and to his best

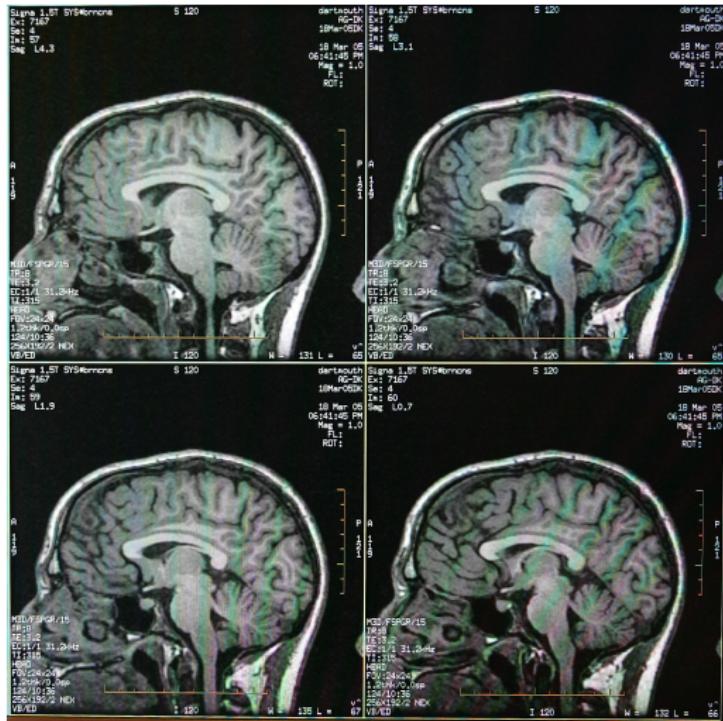
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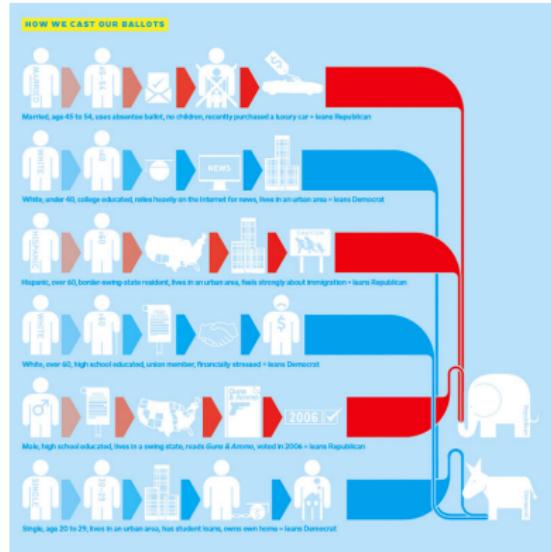
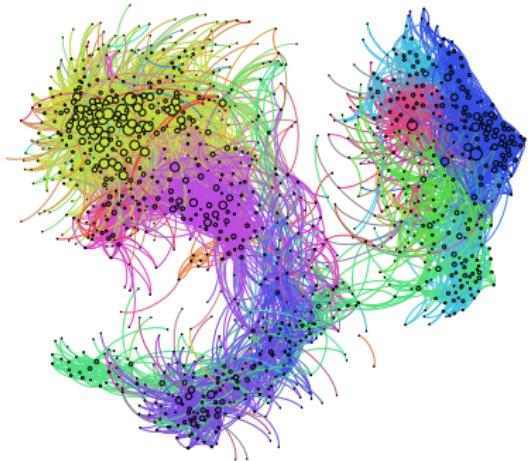
Knowledge



Neuroscience



Social networks

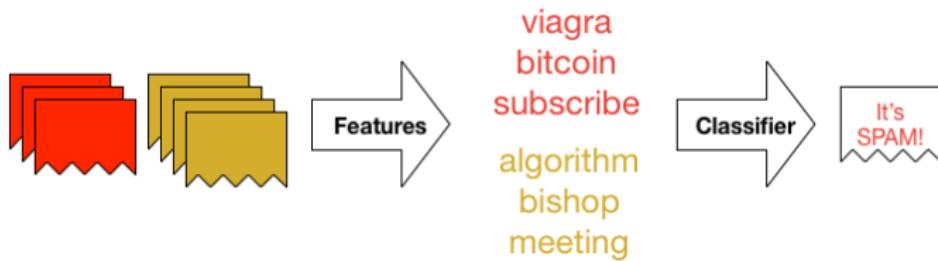


Finance

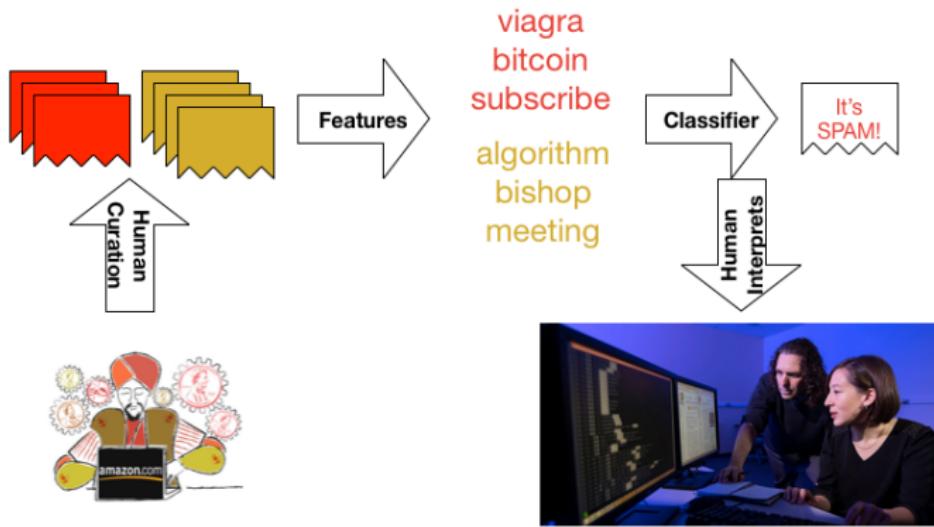


Data are input to algorithms

We can recreate human decisions

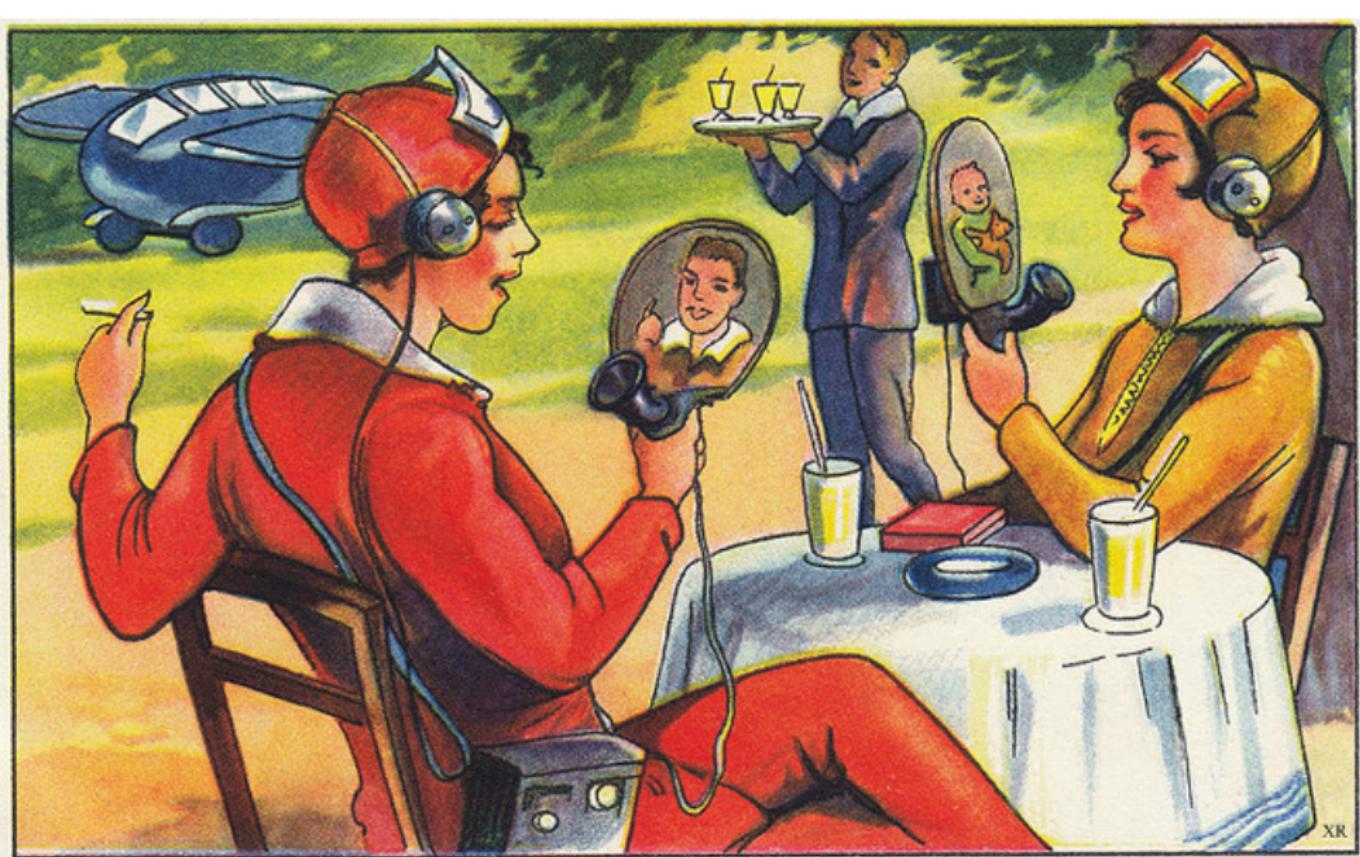


We can recreate human decisions



Algorithms can solve tasks





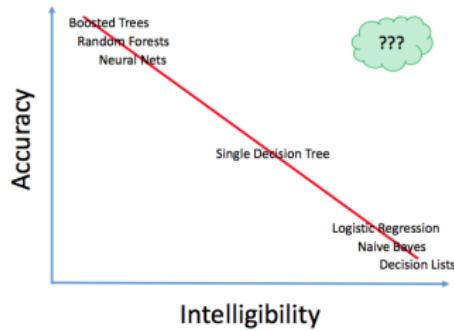
Predictions: Technology changes but society doesn't



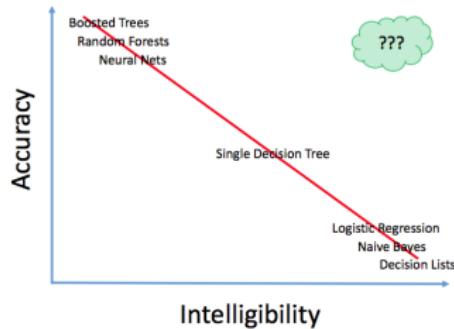
Are we prepared for social changes?

Discussions of AI Need Realism

- You can't solve a task without good data
- Good data often requires humans

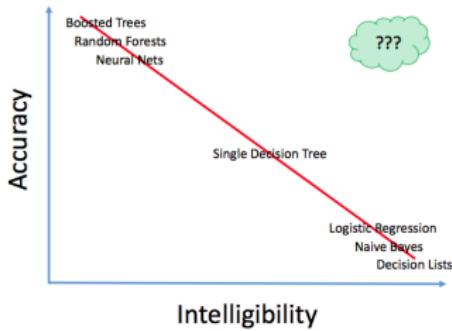


Discussions of AI Need Realism



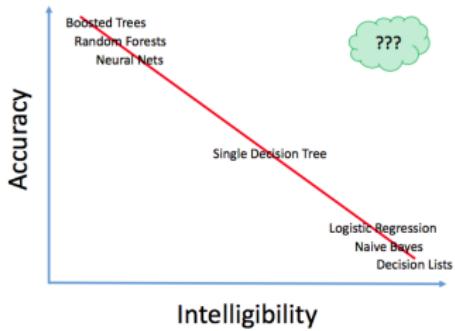
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Discussions of AI Need Realism



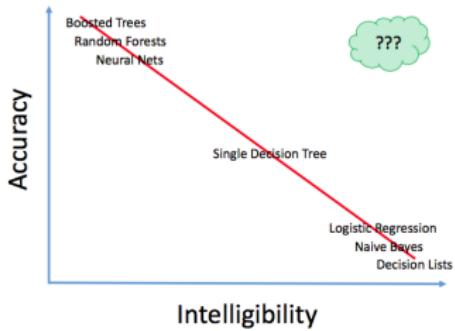
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- Effective solutions often require infrastructure
 - Explanations
 - Retraining
 - Socio-technical interfaces

Discussions of AI Need Realism



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 - Socio-technical interfaces
- DS/ML/AI is **hard** (but rewarding!)