

Introduction to Computational Social Science

Bamberg Summer Institute in Computational Social Science

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Many thanks to Matthew Salganik for providing material for this lecture

What is computational social science?

What is computational social science?

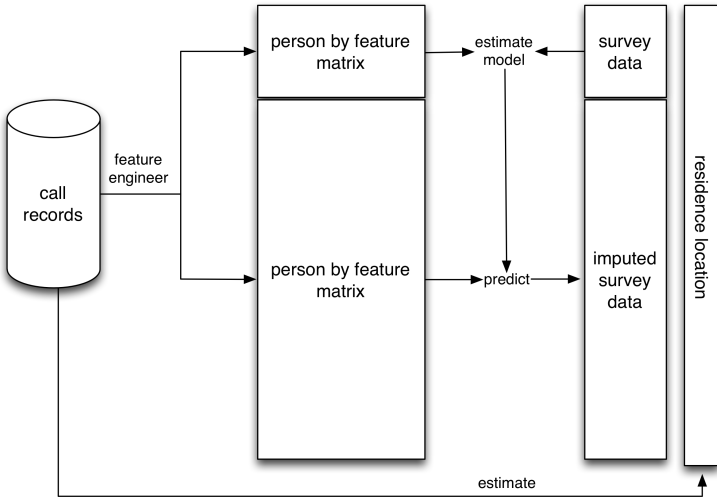
Anything that's cool

Predicting poverty and wealth from mobile phone metadata

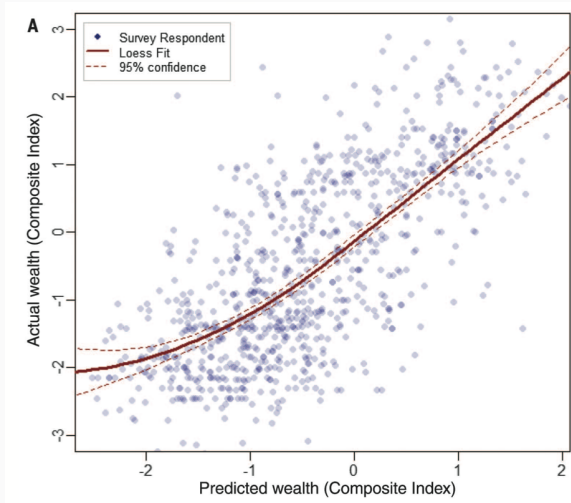
Joshua Blumenstock,^{1*} Gabriel Cadamuro,² Robert On³

<http://dx.doi.org/10.1126/science.aac4420>

What is computational social science?

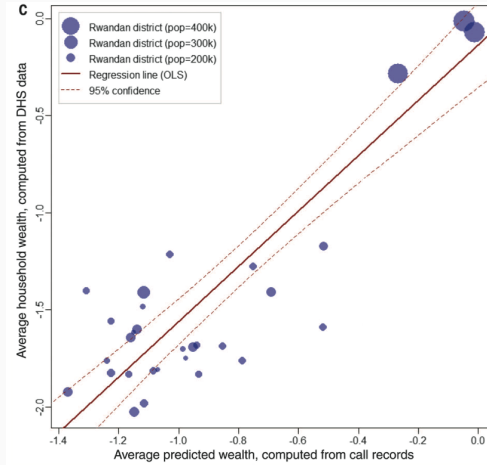


What is computational social science?



<http://dx.doi.org/10.1126/science.aac4420>

What is computational social science?



10 times faster, 50 times cheaper

What is computational social science?

- *computational* and *social science*
- often involves ethical/privacy questions that are now considered complex
- combines readymades and custommades

What is computational social science?



readymades



custommades

https://commons.wikimedia.org/wiki/File:Duchamp_Fontaine.jpg

https://commons.wikimedia.org/wiki/File:%27David%27_by_Michelangelo_JBU0001.JPG

What is computational social science?

- *computational and social science*
- often involves ethical/privacy questions that are now considered complex
- combines readymades and custommades
- involves five key communities: social science, data science, business people, privacy advocates, policy makers

What is computational social science?

Balance between social science, data science, business people,
privacy advocates, and policy makers

Health Ecosystem vs Horrific Monoculture

What is computational social science?

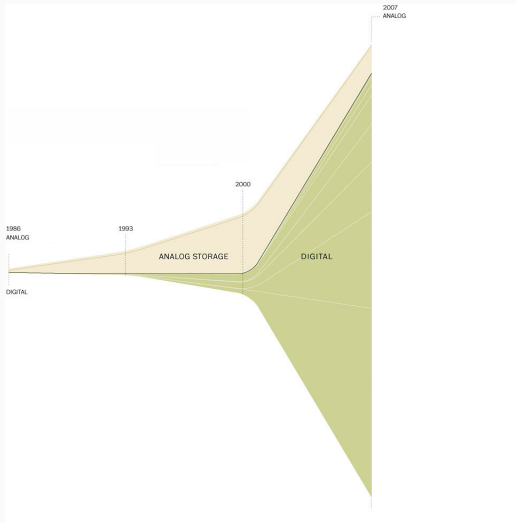
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Isn't computational social science a fad?

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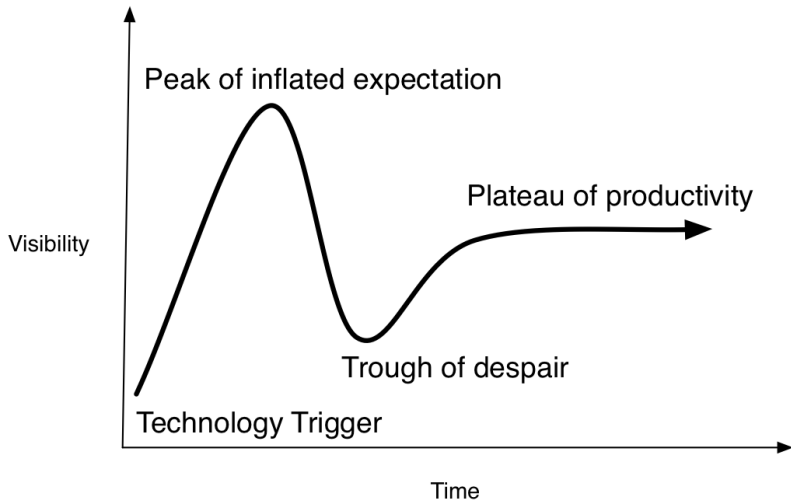
No

What is computational social science?



<http://www.washingtonpost.com/wp-dyn/content/graphic/2011/02/11/GR2011021100614.html>, based on Hilbert and López (2011)

What is computational social science?



How do we create computational social science, individually and as a community?

Social Scientists \longleftrightarrow Data Scientists

What is data science?

Anything that's cool

50 Years of Data Science

David Donoho

Department of Statistics, Stanford University, Stanford, CA

<https://doi.org/10.1080/10618600.2017.1384734>

- goes back to Tukey (1962)
- learning from data
- it includes statistics and much more

What is data science?

- data science alone is not enough if we want to study social behavior (e.g., Anderson)
- social science alone is not enough if we want to use new data sources

What is data science?

Hanna Wallach (2015) reports overhearing: “I don’t get it. Why is that research?”

Computer science	Social science
Study anything	Study social things
Methods driven	Question driven
Large found data	Small designed data
Prediction	Explanation

http://videlectures.net/icml2015-wallach_social_science/

What is data science?

Another important difference between social science and data science:



Social Scientists \longleftrightarrow Data Scientists