Profiling, Micro-targeting and the Right to Reasonable Algorithmic Inferences

Swati Gupta

Assistant Professor
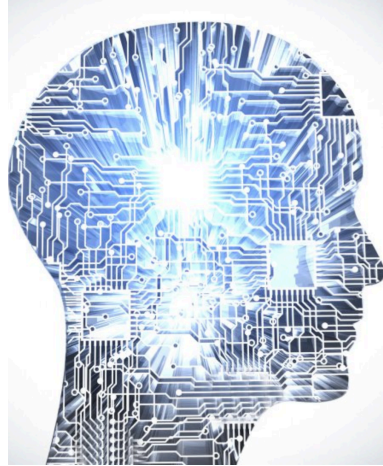School of Industrial and Systems Engineering,
Georgia Institute of Technology

February 1, 2019
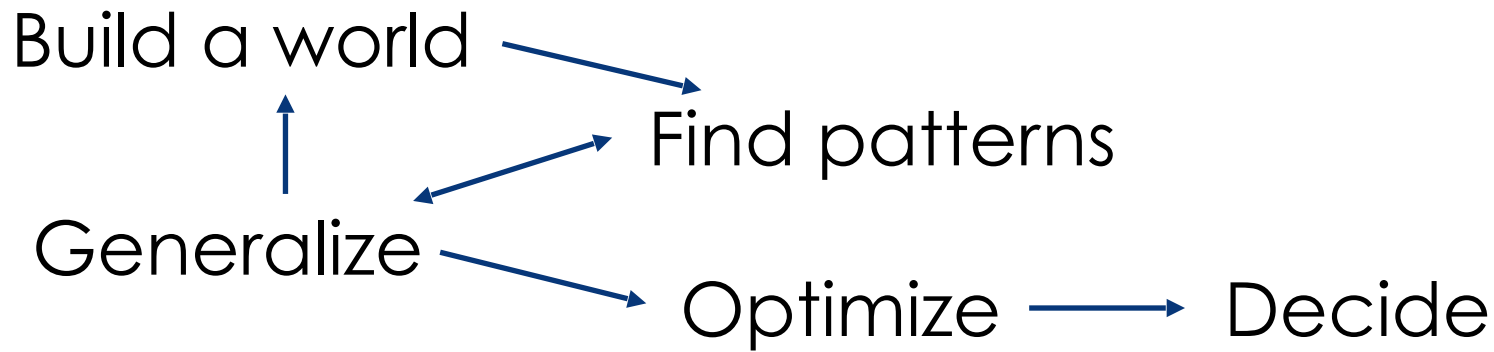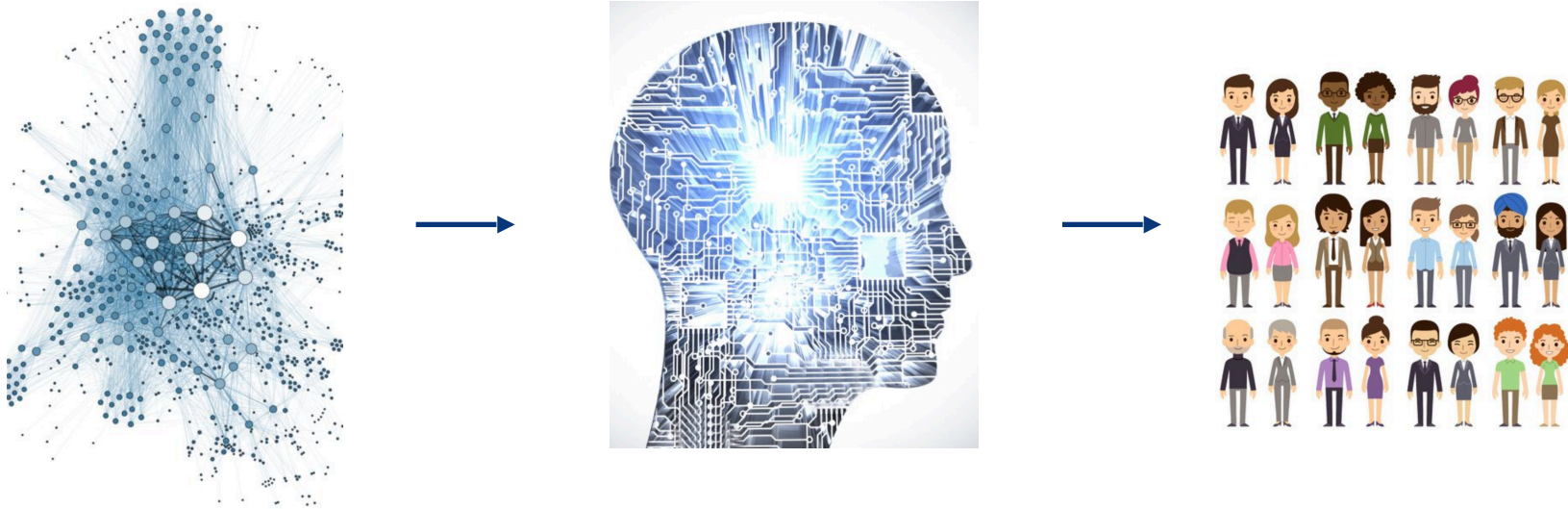
Machine Learning Pipeline

Data

Machine Learning/AI

Data driven decisions

*What is the effect of these decisions on humans in terms of **profiling**, microtargeting, right to reasonable algorithmic inferences?*

ML/AI **automates** human *decision-making*

Build a world → Find patterns

Generalize → Find patterns

Generalize → Optimize → Decide

Search: how to find top 10 items a person likes?

What does a person like?

Content-based, Collaborative, Cold Start..

Build a world

Find patterns

Generalize

Recommendations

Optimize → Decide

Search: click through rates, reviews, ratings,..

Advertising: search history, IP address, gender, race, "away-from-home", social network..

Pricing: historical demand with prices, location, assortment of products, purchasing patterns, ..

Routing: congestion on the roads, usual travel patterns, GPS location, road condition..

**Hiring**: college, courses, grades, teams, high school, hobbies, gender, zipcode..

Credit: college, courses, grades, past loans, credit card payments, location, social network..

Data generates (meta)data

Data collection,
Cleaning,
Feature extraction,
Summarization,
Representation,
Proxies,
Neural networks,
A/B testing,
Low rank models,
Website design,
Optimized costs,
Selection of
solutions..

Inference from meta-data
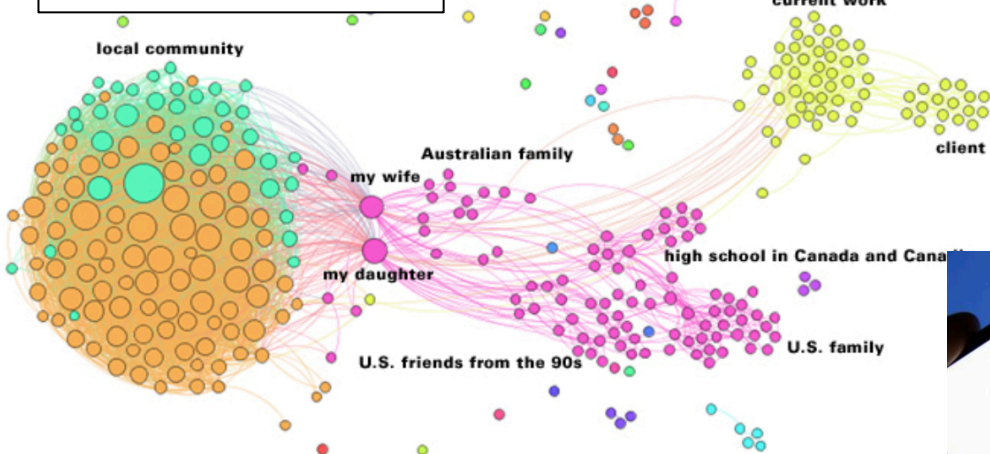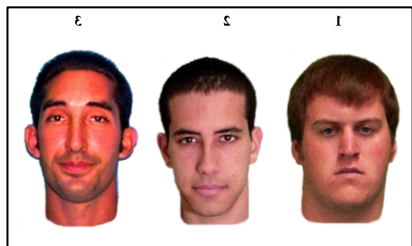
How Target Figured Out A Teen Girl Was Pregnant Before Her Father Did

Kashmir Hill Forbes Staff

Welcome to The Not-So Private Parts where t

BUSINESS / TECH

Detecting suicidal depression: Effort afoot to create smartphone apps that can monitor teen angst

AP

NEW YORK – Rising suicide rates and depression in U.S. teens and young adults have prompted researchers to ask a provocative question: Could the same devices that some people blame for contributing to tech-age angst also be used to detect it?

JAN 4, 2019

ARTICLE HISTORY

PRINT SHARE

Learning what is "efficient"

Amit Datta*, Michael Carl Tschantz, and Anupam Datta

Automated Experiments on Ad Privacy Settings

A Tale of Opacity, Choice, and Discrimination

Abstract: To partly address people's concerns over web tracking, Google has created the Ad Settings webpage to provide information about and some choice over the profiles Google creates on users. We present AdFisher, an automated tool that explores how user behaviors, Google's ads, and Ad Settings interact. AdFisher can run browser-based experiments and analyze data using machine learning and significance tests. Our tool uses a rigorous experimental design and statistical analysis to

serious privacy
data are used
content, notab
Many websites
source their a
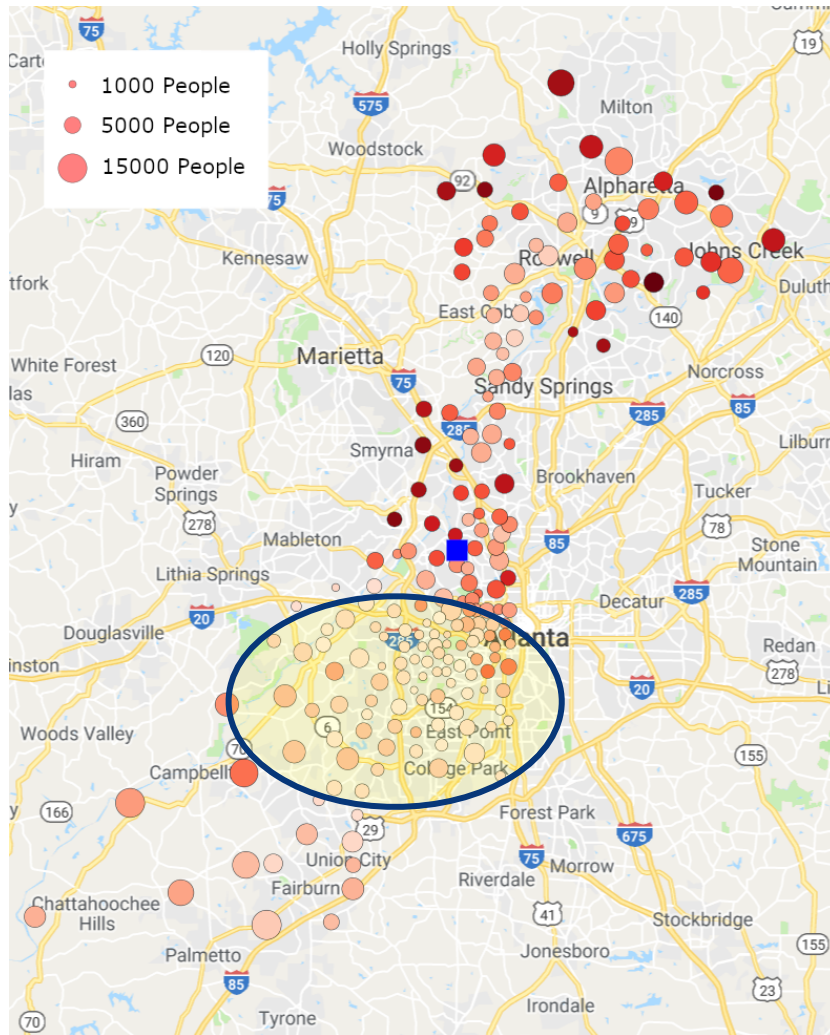ad networks, s
works embed t
sites providing
each user's beh

Amazon to Bring Same-Day Delivery to Roxbury After Outcry

by **Spencer Soper**
April 26, 2016, 5:19 PM EDT *Updated on* April 26, 2016, 8:22 PM EDT

Build a world

Find patterns

Generalize

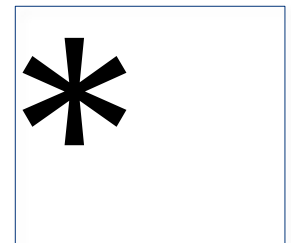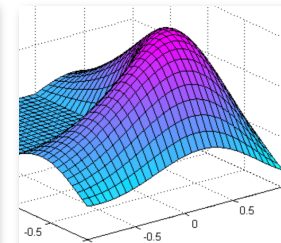Optimize → Decide
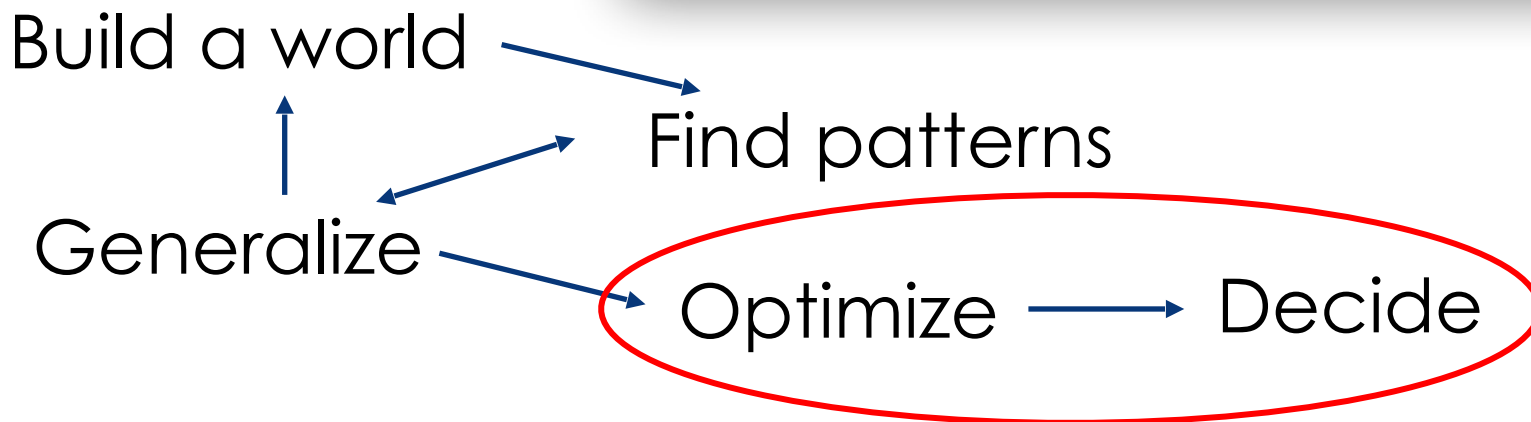
Learning what is "efficient"

Routing Inventory

Suppose poor customers have a smaller holding capacity than rich customers,
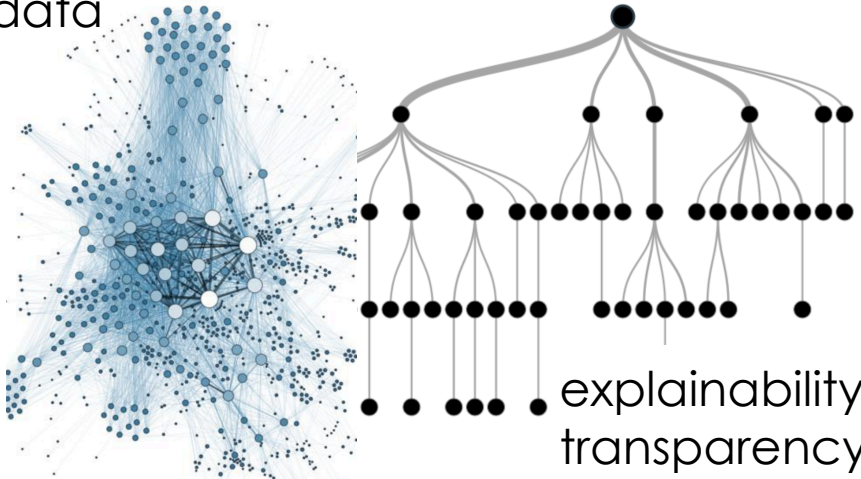
Using minimum cost routes, below poverty line customers stock out **4-5 times more than** above poverty line customers.

Swati Gupta | Georgia Institute of Technology | www.swatigupta.tech | ongoing work with Michael Wang

Potential Solutions

cross-disciplinary work

data

explainability
transparency

adaptivity

auditing

Classified
high risk

Summary

ML/AI **automates** human *decision-making*

Proxies for Search, Advertising, Hiring, Credit..

Data generates (**meta**)data: features

Inferences from meta-data: relationships

Learning what is **"efficient":** optimize

Solutions?