

# Class Introduction

BUS 696: Machine Learning for Managers

Prof. Jonathan Hersh

# Intro to Data Science Class @ Berkeley

Welcome to BUS 696!

Be glad you're not in this class



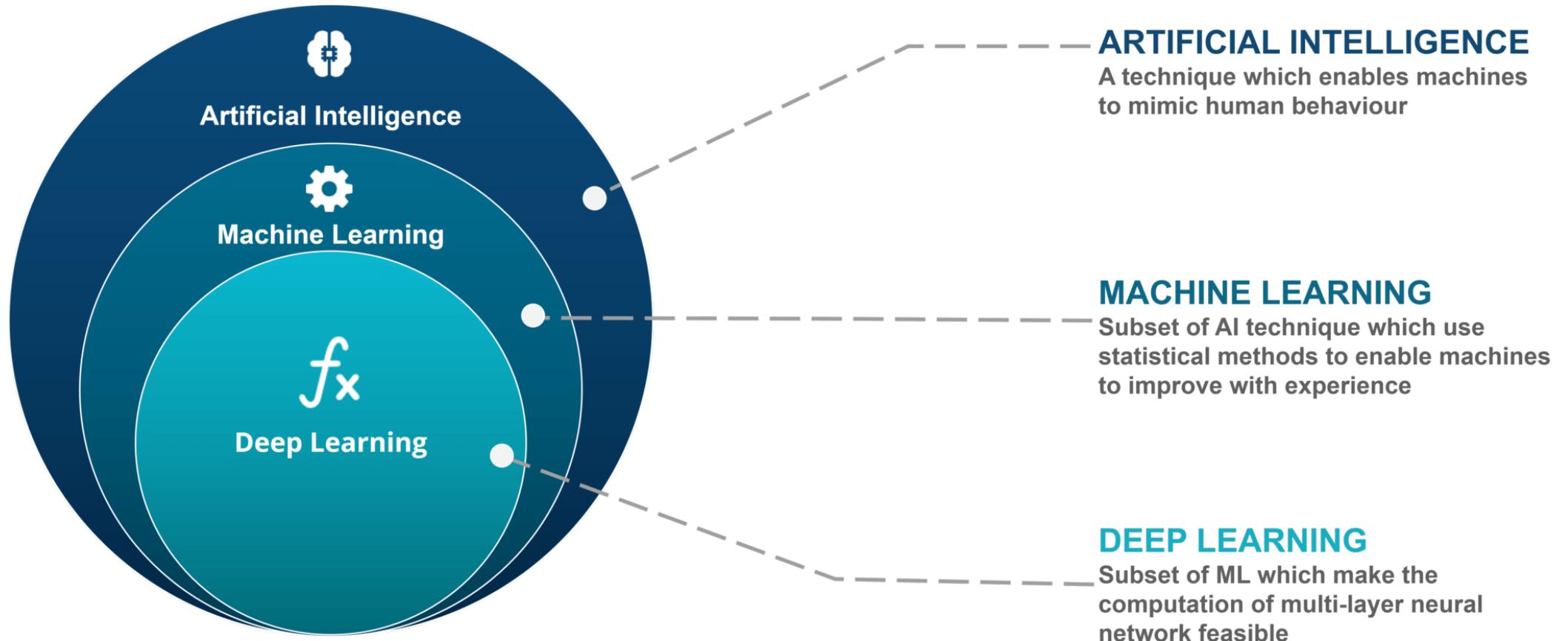
# BUS 696

- 1. Syllabus**
2. Intro to Class Materials
3. Ice Breaker
4. Intro to R / RStudio

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# What is Machine Learning? What is Artificial Intelligence?



# Bill Gates Says This Type of AI Will Be Worth “10 Microsofts”



Rex Moore, The Motley Fool

Motley Fool August 24, 2019

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**Microsoft** (NASDAQ: MSFT) founder Bill Gates was speaking to a group of college students in 2004.

According to *The New York Times*, Gates was a bit concerned about the decline in the number of computer science majors, as well as the notion that the field had matured and there weren't many breakthroughs left to achieve in the area.

One student expressed doubt that there would ever be another tech company as successful as Microsoft. Gates' reply is eye-opening:

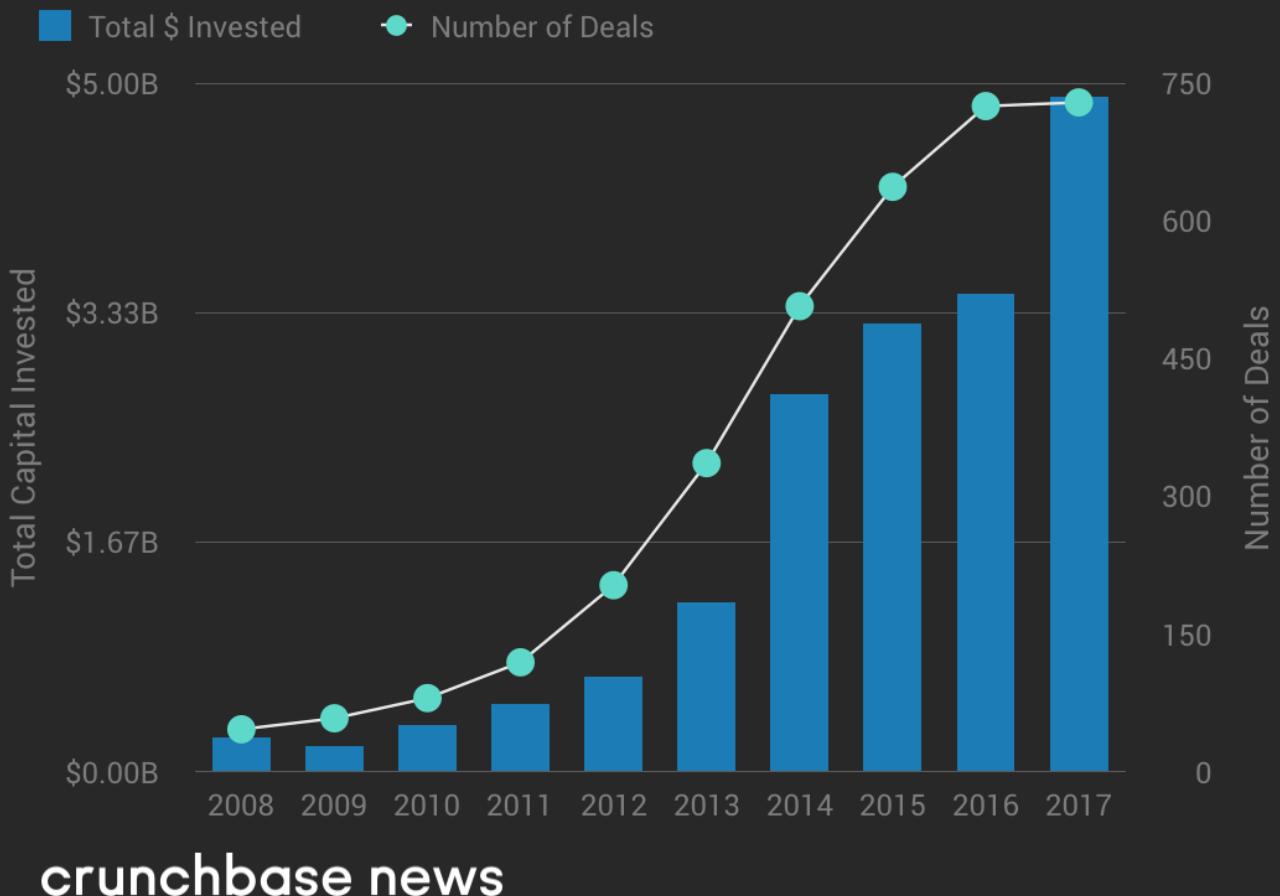
"If you invent a breakthrough in artificial intelligence, so machines can learn, **that is worth 10 Microsofts.**"

**He wasn't kidding...**



# Venture Funding Into US Artificial Intelligence, Machine Learning, And Related Startups

2008 through 2017. Dollar volume based on deals of known size; round counts are for all deals.



## TECH

# AI Is Hot and SoftBank's New Tech Megafund Offers Cash to Burn

Vision Fund 2 is targeted to be more than five times the \$20 billion raised by privately backed AI companies globally in 2018



Masayoshi Son's SoftBank has defied venture-capital norms by writing checks for billions of dollars in quick succession. PHOTO: KIM KYUNG-HOON/REUTERS

By [Heather Somerville](#)

Updated Aug. 8, 2019 4:50 am ET

**SoftBank Group Corp.**'s plans for a second technology megafund focused on artificial-intelligence startups is poised to flood an already-hyped sector with more cash as skepticism mounts about investor exuberance for such companies.

**At a targeted \$108 billion**, Vision Fund 2 would be more than five times the total dollar amount that privately backed AI companies raised from all investors globally last year, when equity investment hit a record \$20 billion, according to data firm CB Insights. The average deal size for AI startups almost tripled from 2013 to 2018.

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DATA

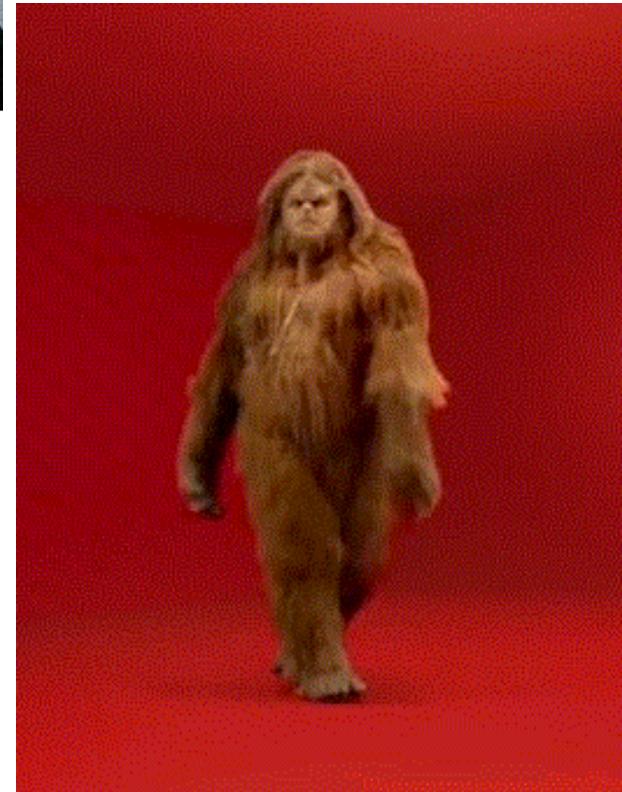
# Data Scientist: The Sexiest Job of the 21st Century

by Thomas H. Davenport and D.J. Patil

FROM THE OCTOBER 2012 ISSUE

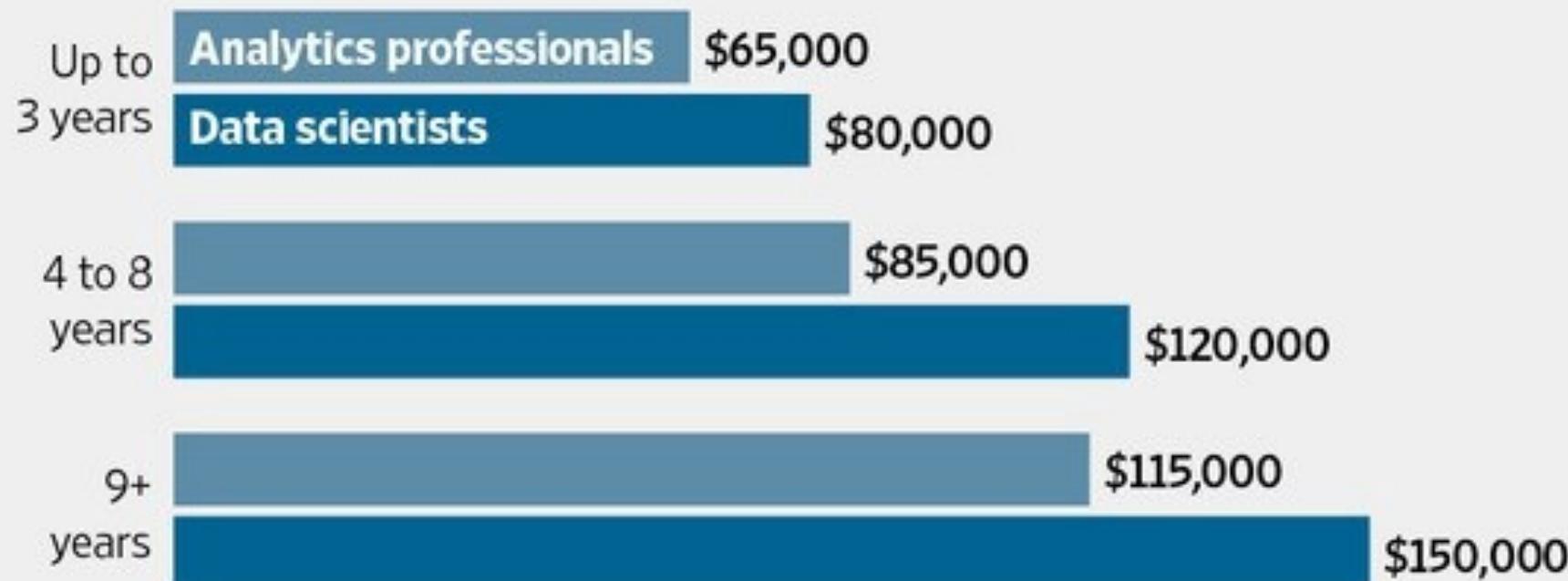
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**W**hen Jonathan Goldman arrived for work in June 2006 at LinkedIn, the business networking site, the place still felt like a start-up. The company had just under 8 million accounts, and the number was growing quickly as existing members invited their friends and colleagues to join. But users weren't seeking out connections with the people who were already on the site at the rate executives had expected. Something was apparently missing in the social experience. As one LinkedIn manager put it, "It was like arriving at a conference reception and realizing you don't know anyone. So you just stand in the corner sipping your drink—and you probably leave early." Goldman, a PhD in physics from Stanford, was intrigued by the linking he did see going on and by the richness of the user profiles. It all made for messy data and unwieldy analysis, but as he began exploring people's connections, he started to see possibilities. He began forming theories, testing hunches, and finding patterns that allowed him to predict whose networks a given profile would land in. He could imagine that new features capitalizing on the heuristics he was developing might



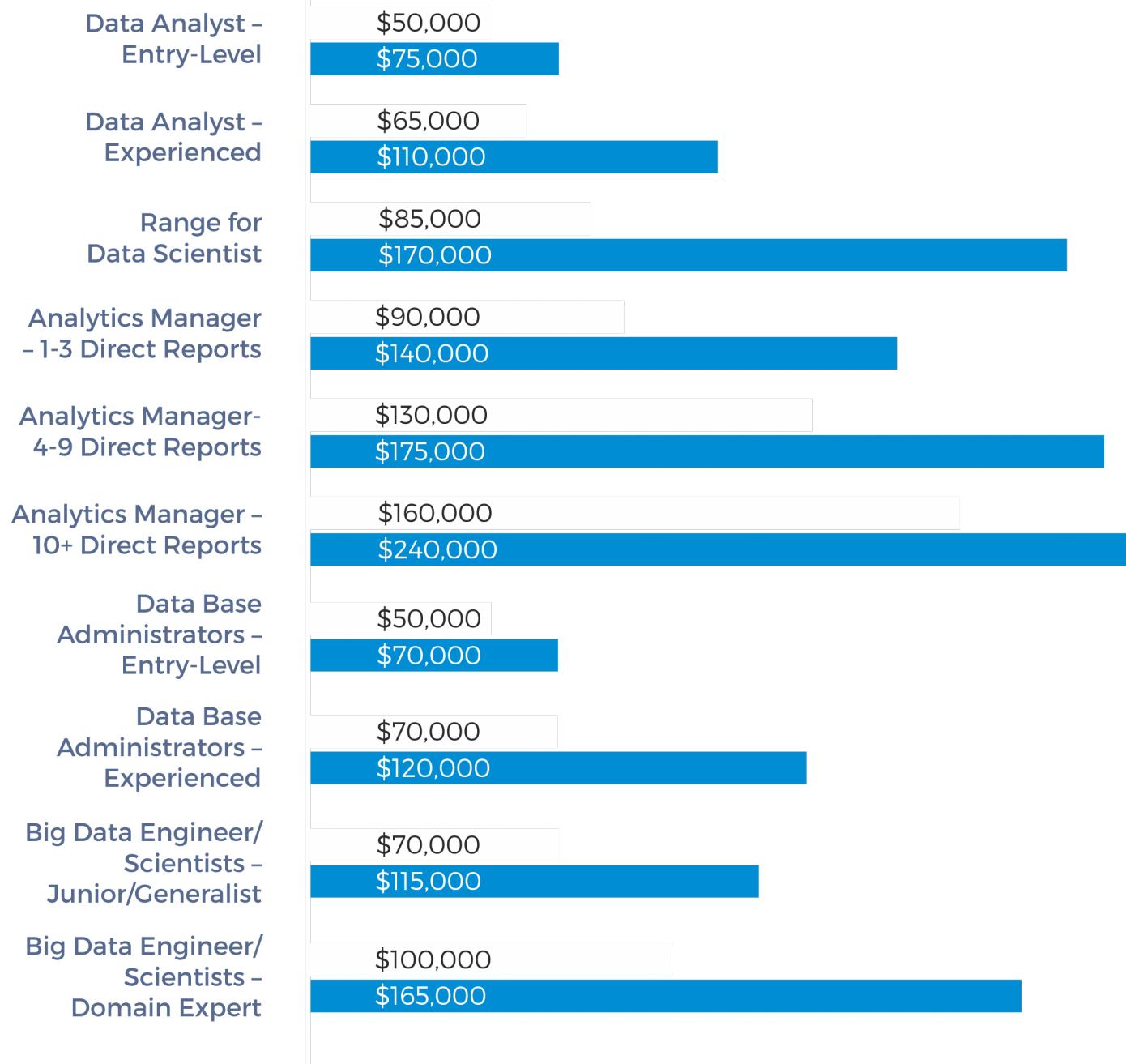
# **Big Data, Big Paycheck**

Median salary for analytics professionals and those specifically within data science, by level of experience.

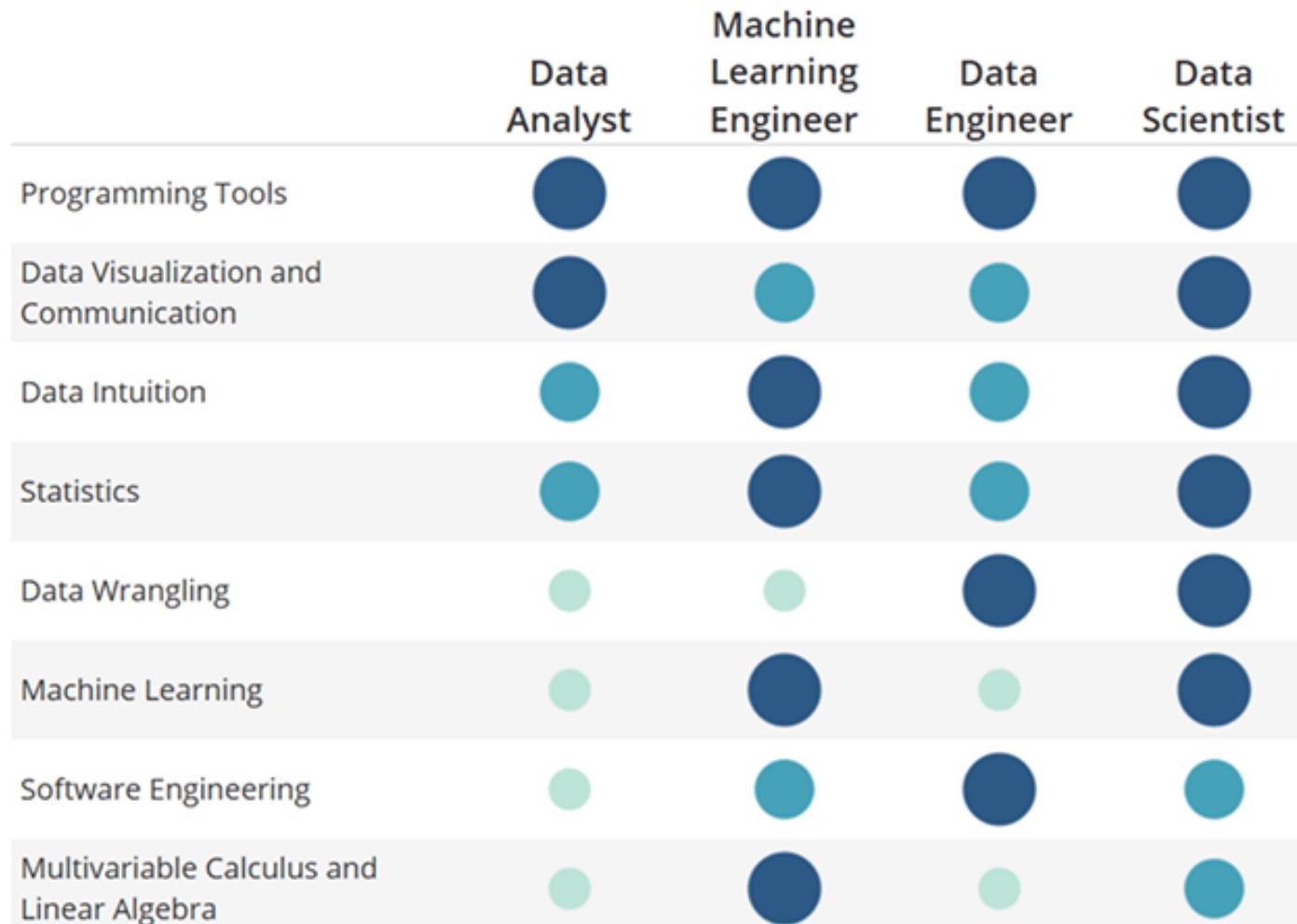


Note: Data do not include managers   Source: Burtch Works

The Wall Street Journal



# Varied Skills in the Data Science Landscape



Not that important

Somewhat important

Very important

# Policy Problems of AI/Big Data



Resistance is futile.



The New York Times

## Good for Google, Bad for America

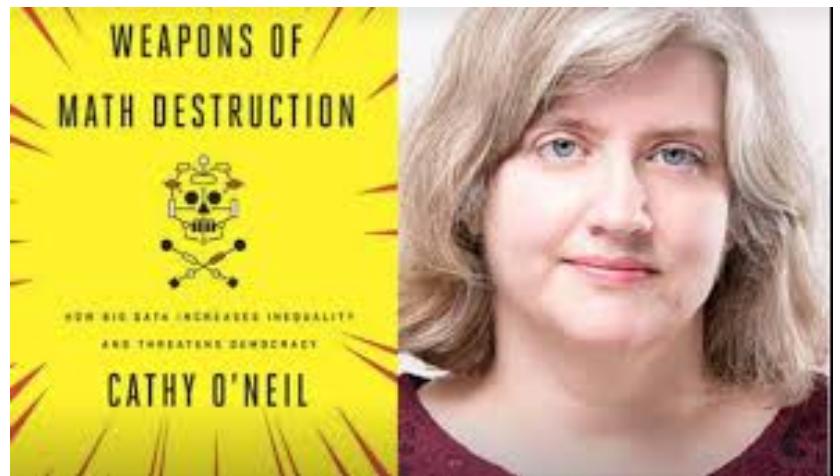
At its core, artificial intelligence is a military technology. Why is the company sharing it with a rival?

By Peter Thiel  
Mr. Thiel is an entrepreneur and investor.

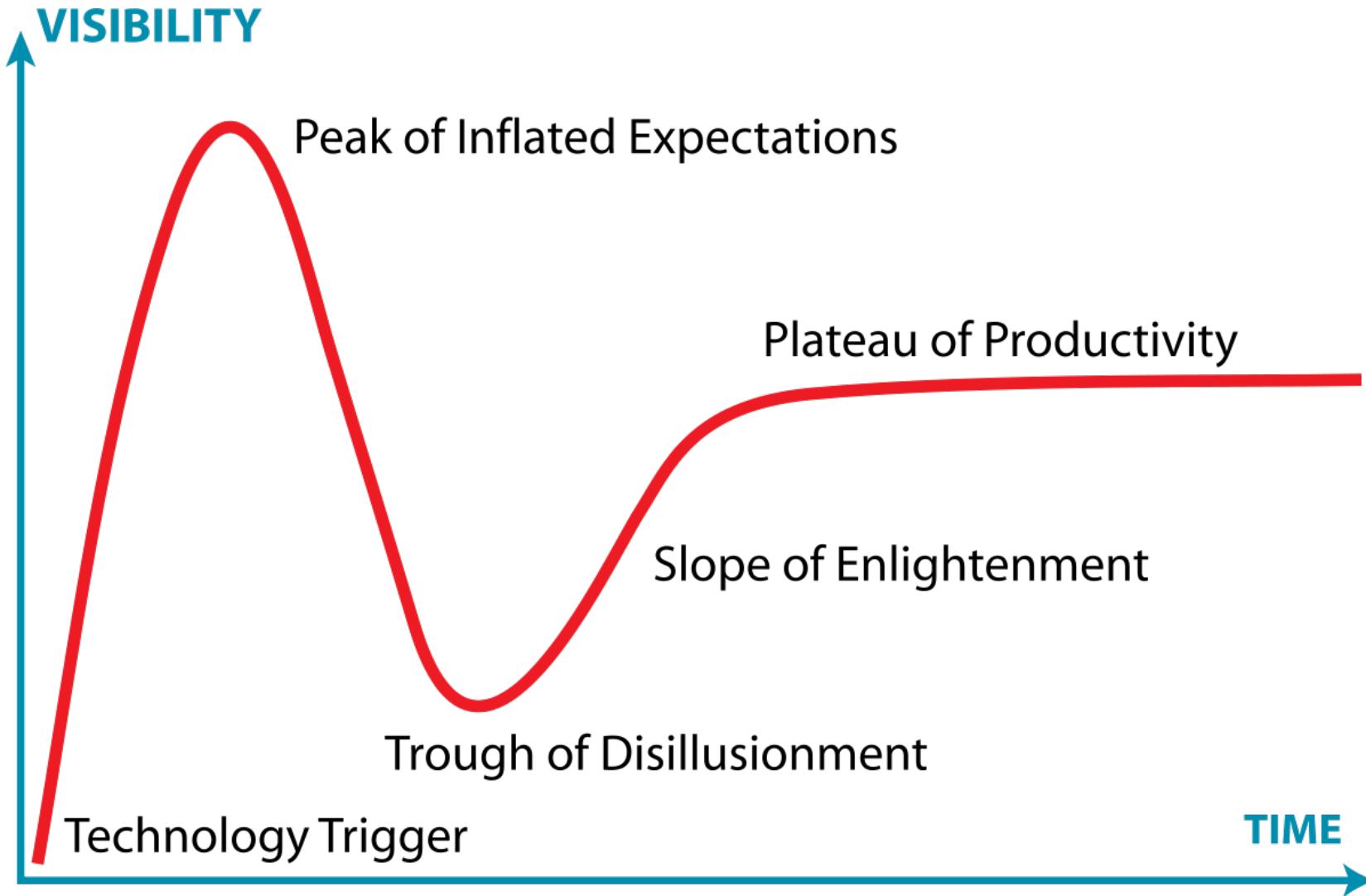
Aug. 1, 2019

A “Manhattan Project” for artificial intelligence is how Demis Hassabis, the founder of DeepMind, described his company in 2010, when I was one of its first investors. I took it as figurative grandiosity. I should have taken it as a literal warning sign, because that is how it was taken in foreign capitals that were paying close attention.

Now almost a decade later, DeepMind is the crown jewel of Google’s A.I. effort. It has been the object of intense fascination in East Asia especially since March 2016 when its AlphaGo software project beat Lee Sedol, a champion of the ancient strategic board game of Go.



# “Hype” Cycle

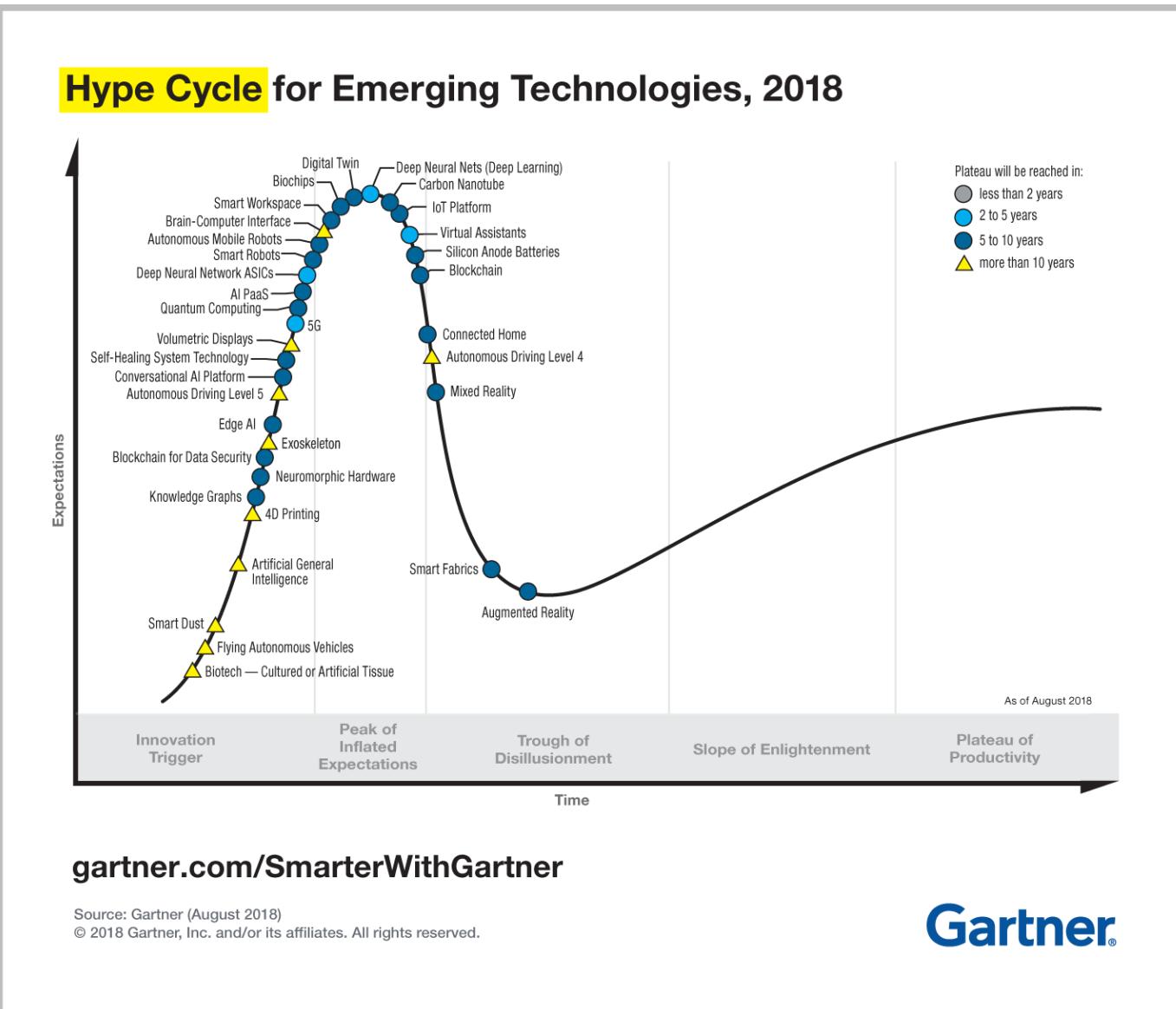


# Where are we in the hype cycle?



Source: Gartner (July 2016)

# Where are we in the hype cycle?



# Ice Breaker

1. Syllabus
2. Intro to class materials
3. **Ice Breaker**
  - **Section 2:** [tinyurl.com/IntroMGSC310-Morning](http://tinyurl.com/IntroMGSC310-Morning)
  - **Section 3:** [tinyurl.com/IntroMGSC310-Afternoon](http://tinyurl.com/IntroMGSC310-Afternoon)
4. Intro to R / RStudio

# Intro R/R Studio

**Download these:**

**1. R Studio v.1.2.1335**

- <https://www.rstudio.com/products/rstudio/download/#download>

**2. R 3.6.1**

1. Windows: <https://cran.r-project.org/bin/windows/base/>
2. Mac: <https://cran.r-project.org/bin/macosx/>

Or just go here: rstudio.cloud