# Artificial Intelligence in Finance

*at*

# Hong Kong University of Science and Technology

# Guest speaker – Brian Zheng

**Brian Zheng**

- Grew up in Shenzhen

- College in Chicago

- Working in Hong Kong

# Northwestern University

**My college**

- Class of 2016, Northwestern University
- Bachelor of Arts in Mathematics and Economics
- Kellogg Certificate in Financial Economics

# Internships



**PricewaterhouseCoopers, Shenzhen**

- Management Consulting internship

- Sophomore Year summer

**Goldman Sachs, Chicago**

- Private Wealth Management internship

- Junior Year spring
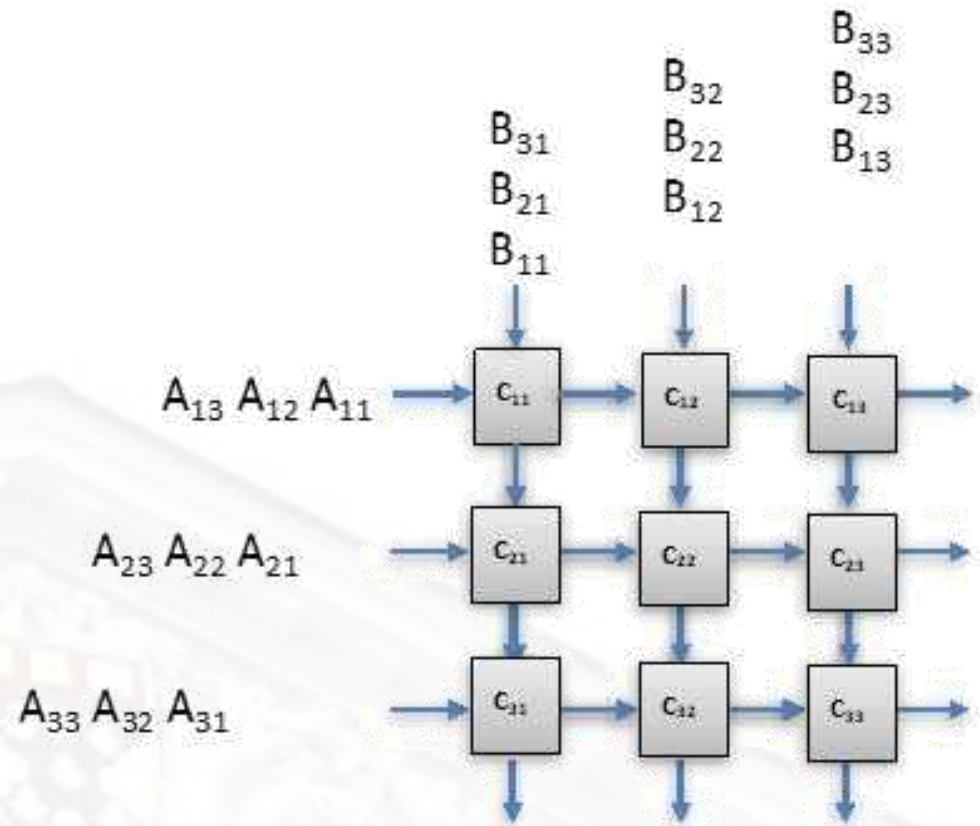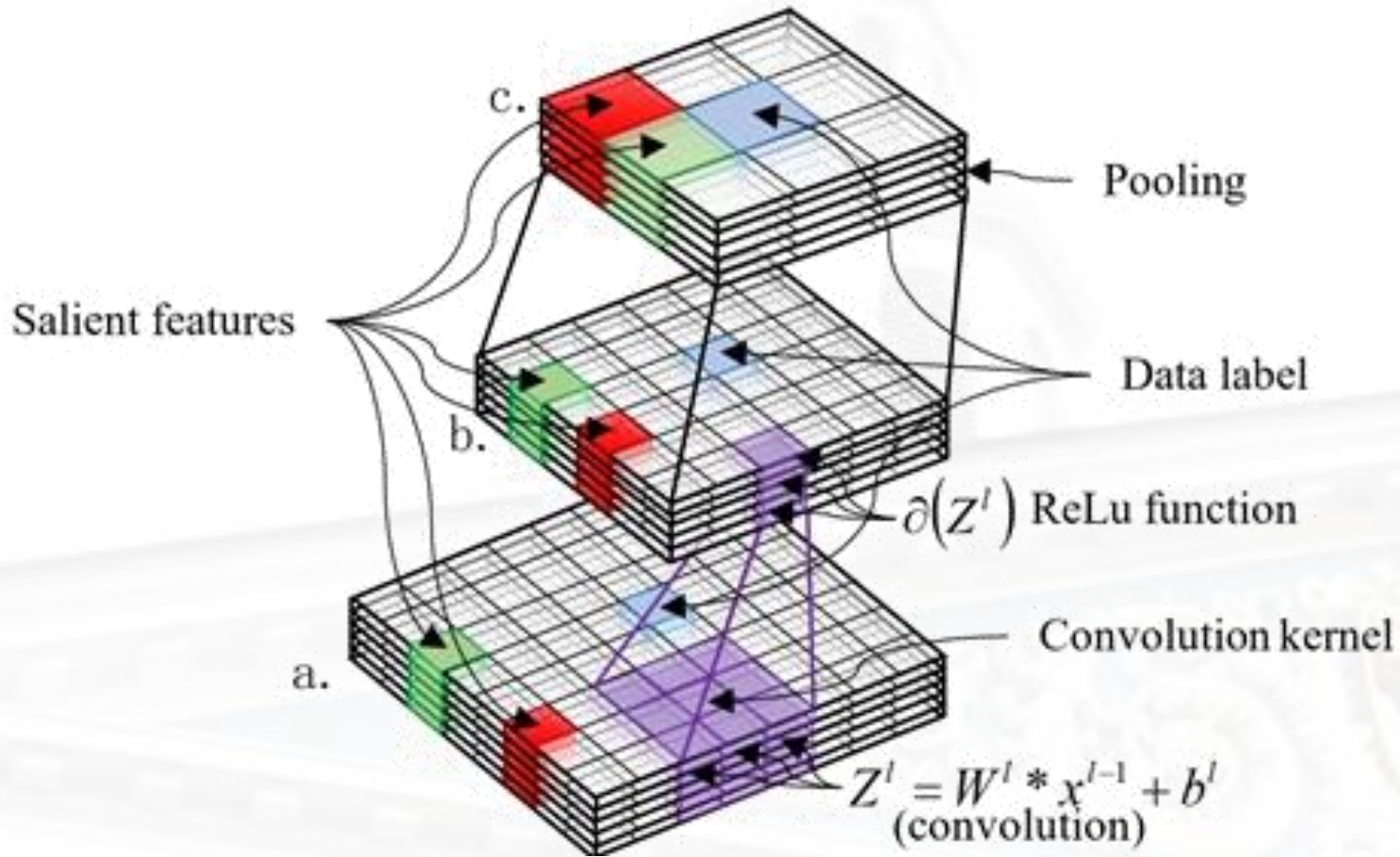
# Full time career

**J.P. Morgan, Hong Kong**

- Investment Banking Analyst, 2016 - 2019

- Investment Banking Summer Analyst, 2015

**Alpha Intelligence Capital**

- Investment Associate

Alpha
Intelligence
Capital

Salient features

c. Pooling

Data label

b. $\partial(Z^l)$ ReLu function

Convolution kernel

a. $Z^l = W^l * x^{l-1} + b^l$
(convolution)

$B_{33}$
$B_{32}$ $B_{23}$
$B_{31}$ $B_{22}$ $B_{13}$
$B_{21}$ $B_{12}$
$B_{11}$

$A_{13} A_{12} A_{11}$   $c_{11}$   $c_{12}$   $c_{13}$

$A_{23} A_{22} A_{21}$   $c_{21}$   $c_{22}$   $c_{23}$

$A_{33} A_{32} A_{31}$   $c_{31}$   $c_{32}$   $c_{33}$

# Convolution: 2D & 3D



Image

Convolved Feature

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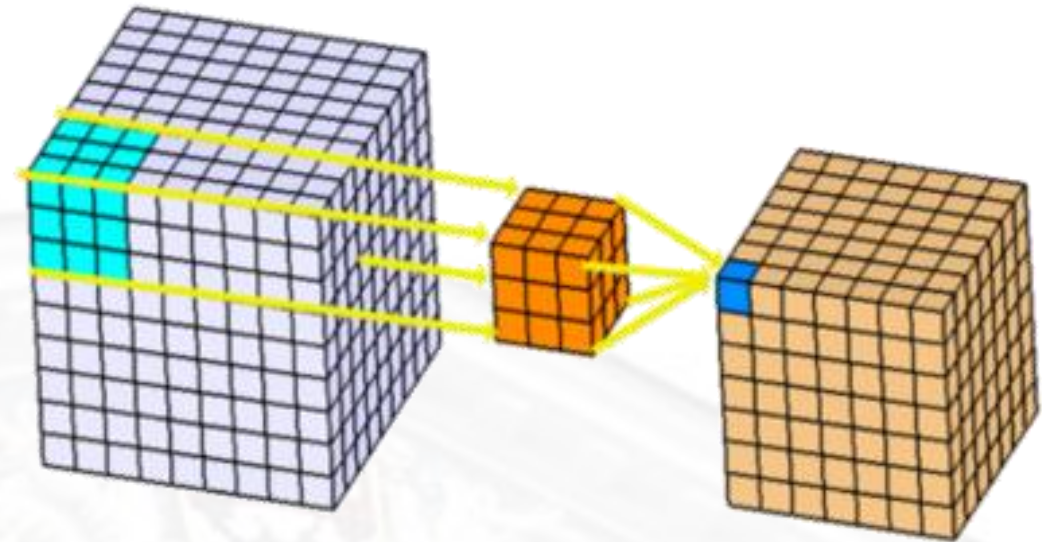
## Teams

We understand that building outstanding robotics is not only about having access to money and tech but also having access to the talent with the vision and ability to build future products.

Our people are our core strength, and building teams that consist of leading engineers and scientists from all over the world is our key priority.

▲ NEXT

**Latest news**

# 20 YEARS OF INTERNET GIANTS

The Top 20 Biggest Web Properties Over Time

| RANK | 1998 | 2003 | 2008 | 2013 | 2018 |
|------|------|------|------|------|------|
| 1 | AOL | YAHOO! | Google | YAHOO! | Google |
| 2 | YAHOO! | AOL Time Warner | YAHOO! | Google | facebook |
| 3 | GEOCITIES | msn | Microsoft | Microsoft | Oath: |
| 4 | msn | ebay | AOL. | facebook | Microsoft |
| 5 | NETSCAPE | Google | FOX | AOL. | amazon |
| 6 | EXCITE | LYCOS | ebay | amazon | COMCAST NBCUNIVERSAL |
| 7 | LYCOS | amazon | ASK | GLAM MEDIA | CBS |
| 8 | Microsoft | ABOUT | amazon | WIKIMEDIA | Disney |
| 9 | AMER.GREETINGS | EXCITE | GLAM MEDIA | CBS | Apple |
| 10 | INFOSEEK | CNET | WIKIMEDIA | Turner | HEARST |
| 11 | ALTAVISTA | DISNEY | facebook | ebay | PayPal |
| 12 | TRIPOD | VIACOM | Apple | Apple | Turner |
| 13 | XOOM | AMER.GREETINGS | CBS | ASK | Twitter |
| 14 | ANGELFIRE | The Weather Channel | Walmart | The Weather Company | meredith |
| 15 | HOTMAIL | REAL | Turner | COMCAST | USA TODAY |
| 16 | amazon.com | VERIZON | VIACOM | ABOUT | Walmart |
| 17 | REAL | WAL★MART | NEW YORK TIMES | GANNETT | WIKIMEDIA |
| 18 | ZDNET | SHOPPING | TARGET | Walmart | The Weather Company |
| 19 | HOTBOT | SYMANTEC | The Weather Channel | ANSWERS | Snapchat |
| 20 | INFOSPACE | AT&T | CRAIGSLIST | LINKEDIN | CONDÉ NAST |

visualcapitalist.com

# 21 Jobs for 2018

# Workers produced much more, but typical workers' pay lagged far behind

Disconnect between productivity and typical worker's compensation, 1948–2013



**1948–1973:**
Productivity: **Up 96.7%**
Hourly compensation: **Up 91.3%**

**1973–2013:**
Productivity: **Up 74.4%**
Hourly compensation: **Up 9.2%**

2013:
243.1%

Productivity

108.9%

Hourly
compensation
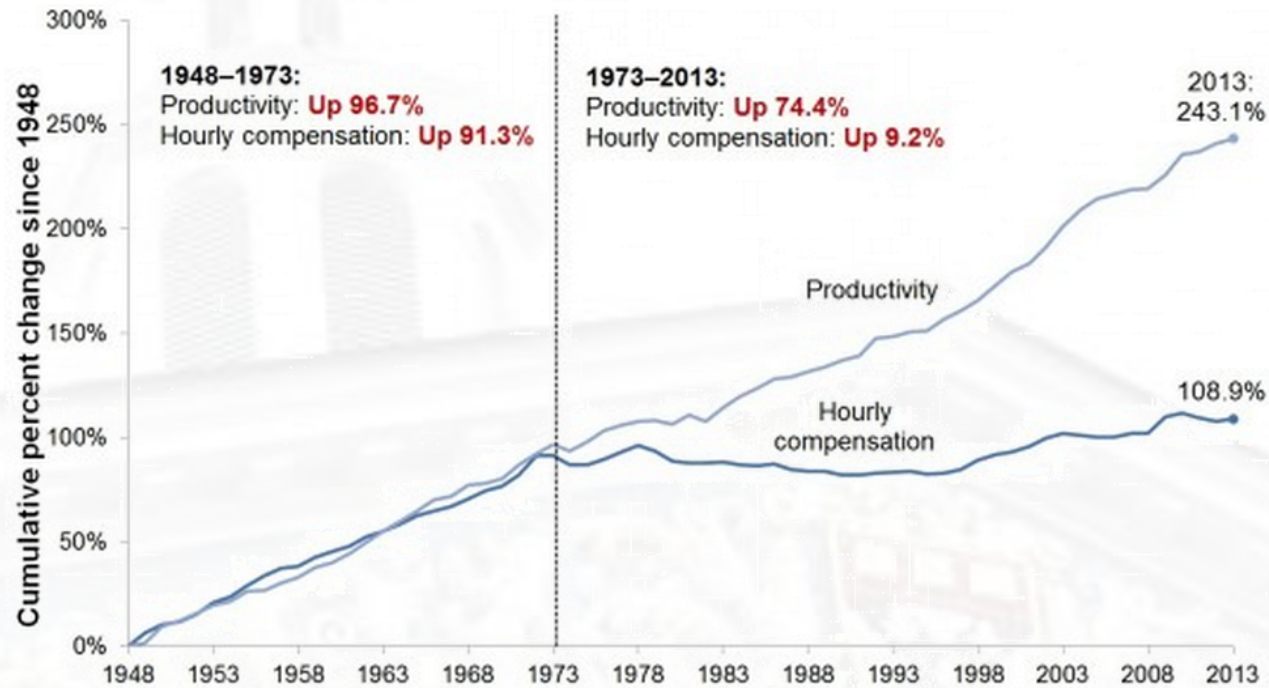
**Note:** Data are for compensation (wages and benefits) of production/nonsupervisory workers in the private sector and net productivity of the total economy. "Net productivity" is the growth of output of goods and services less depreciation per hour worked.

**Source:** EPI analysis of Bureau of Labor Statistics and Bureau of Economic Analysis data

Updated from Figure A in *Raising America's Pay: Why It's Our Central Economic Policy Challenge*

Economic Policy Institute

Payoff

The old learning curve

Knowledge and experience is discounted or even made obsolete by technological progress

The new learning curve with constant disruption by technology

Time

14