

# Accelerating AI Innovation With Open Source



**Ibrahim Haddad, Ph.D.**  
Vice President, Strategic Programs  
Executive Director, LF AI Foundation

Web: [IbrahimAtLinux.com](http://IbrahimAtLinux.com)  
Twitter: [@IbrahimAtLinux](https://twitter.com/IbrahimAtLinux)

**IBM OpenTech AI**  
Helsinki (May 6-7, 2019)





Build and support an AI open community, and drive open source innovation in the AI, ML and DL domains by enabling collaboration and the creation of new opportunities for all the members of the community

# Members

## Premier Members



# Projects



Machine learning platform and marketplace for ML models.



A high-performance distributed ML platform based on Parameter Server, running on YARN and Apache Spark.



A framework designed to help DL cloud service providers to build cluster cloud services using different DL frameworks.



Distributed training framework for TensorFlow, Keras, and PyTorch.



Pyro is a universal probabilistic programming language that enables flexible and expressive deep probabilistic modeling.

03/2018

08/2018

08/2018

12/2018

01/2019

# Universities Contributing to LF AI Projects

- Georgia Tech
- University of British Columbia
- Stanford University
- MIT
- Harvard University
- Oxford University
- Penn University
- NYU
- Florida State University
- University of Copenhagen

# Modular Approach to Hosting Projects

- › We'd like to think of LF AI as a greenhouse growing and sustaining open source AI, ML and DL projects from seed to fruition at an accelerated rate.
- › The Linux Foundation and LF AI provide the support for open development to occur among a diverse and thriving community, in addition to a number of enabling services:
  - › Dedicated staff
  - › Membership and funding
  - › IT Infrastructure
  - › Ecosystem development
  - › CLA management Legal
  - › PR and marketing
  - › Creative work
  - › Events support
  - › Compliance scans
  - › Etc.

l.fdl.io

157

Projects  
882,295 GitHub Stars

9

Technology Categories

68

Founding Organizations  
Market cap of \$6.51T

11

Founding Universities

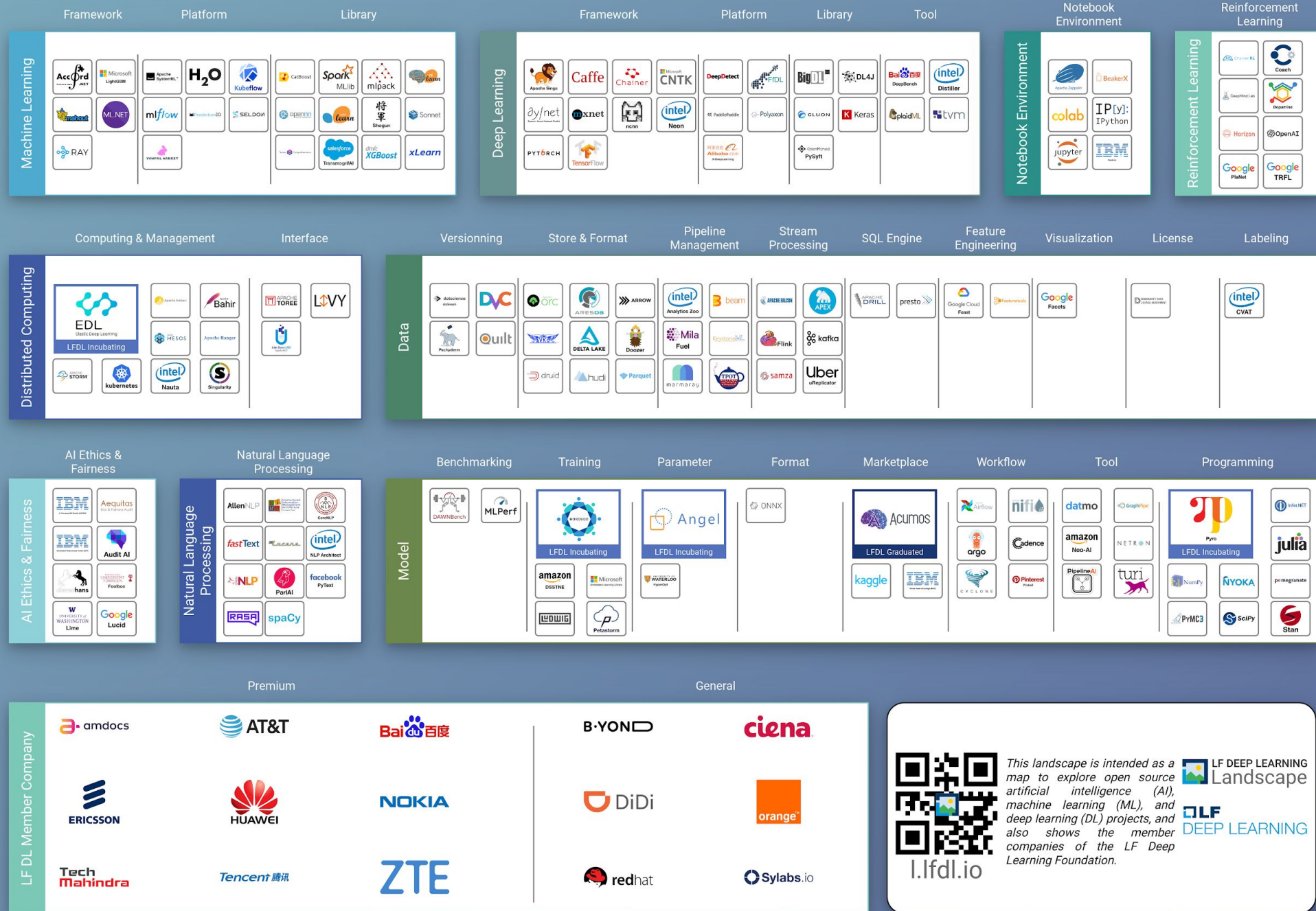
10

Open Source Licenses

Linux Foundation Deep Learning Landscape  
2019-04-29T18:11:52Z 41afd07

See the interactive landscape at l.fdl.io

Greyed logos are not open source



# How much open source code is there?

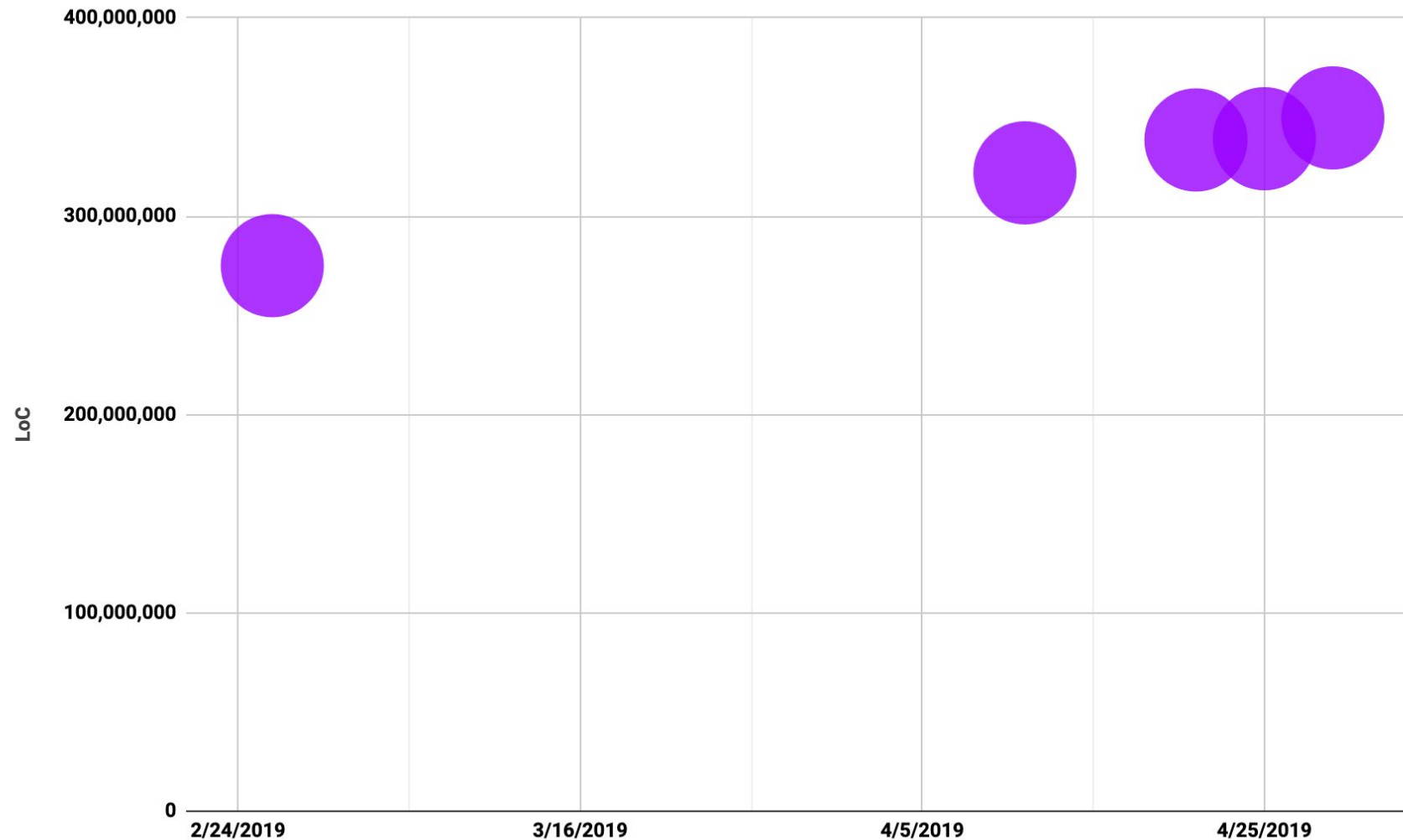
(As of 04/29/2019)

You are currently tracking **349,542,136 lines of code**, committed by **28,958 developers**, from **281 known organizations**, working in **228 repos**, on **166 projects** over the last **5 years, 3 months, and 28 days**.

[Code tracking using Facade](#)

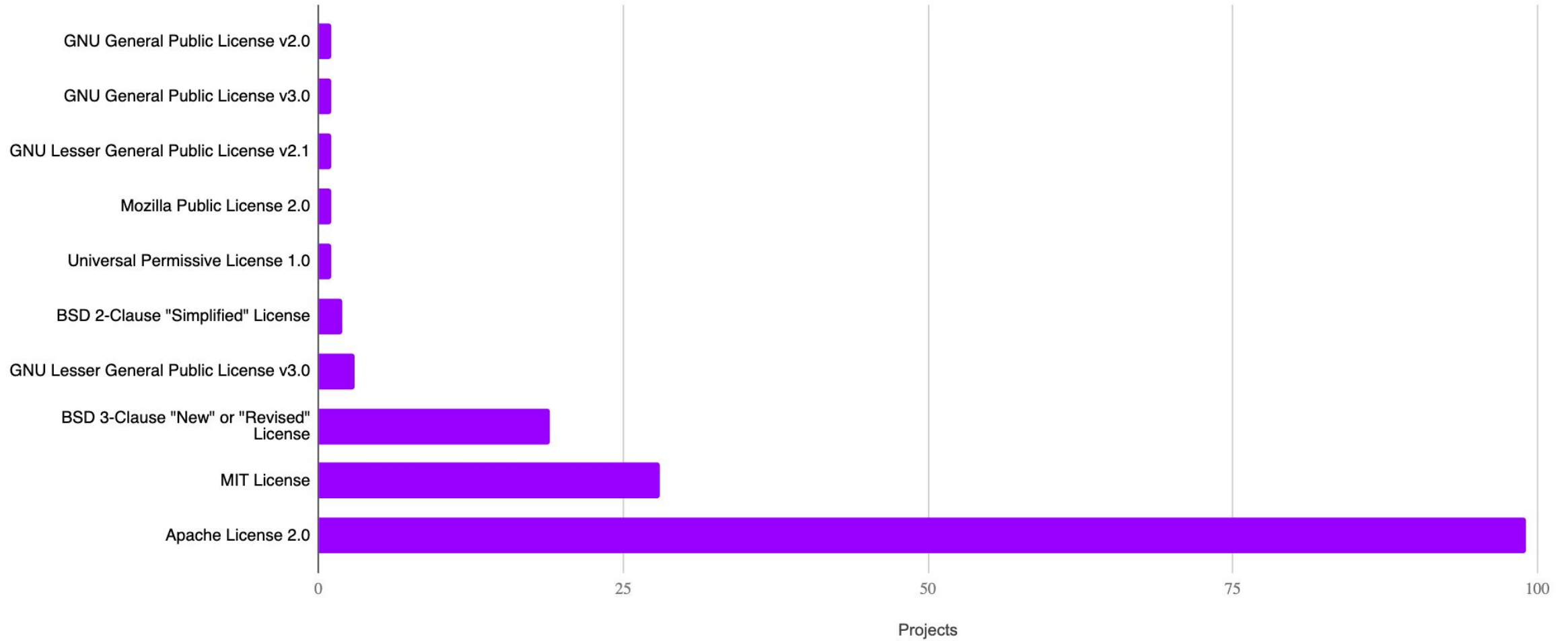


# New Code Development - Accelerated Rate

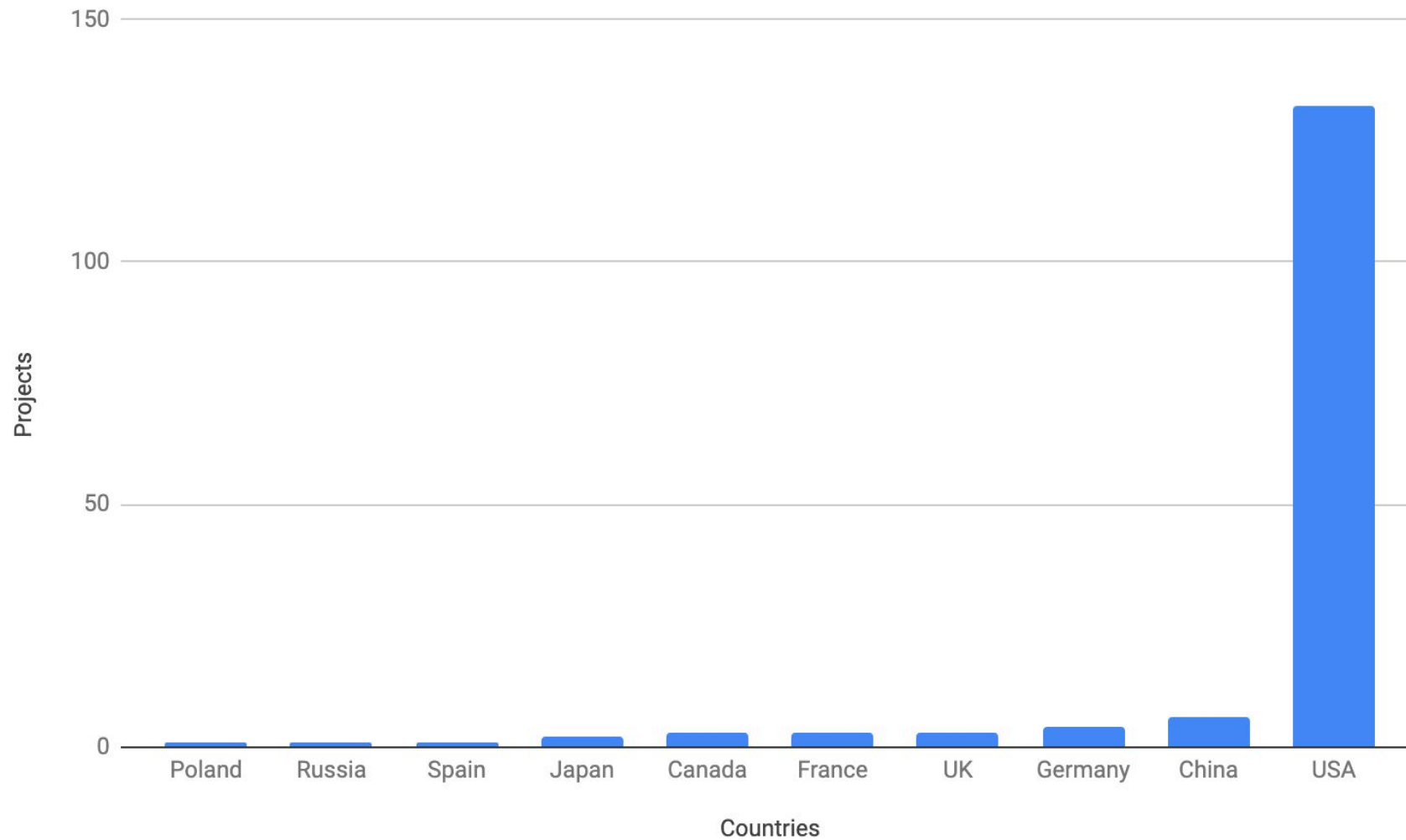


Date	LoC
02/26/2019	275,060,894
04/11/2019	321,880,158
04/21/2019	338,355,661
04/25/2019	339,055,561
04/29/2019	349,542,133

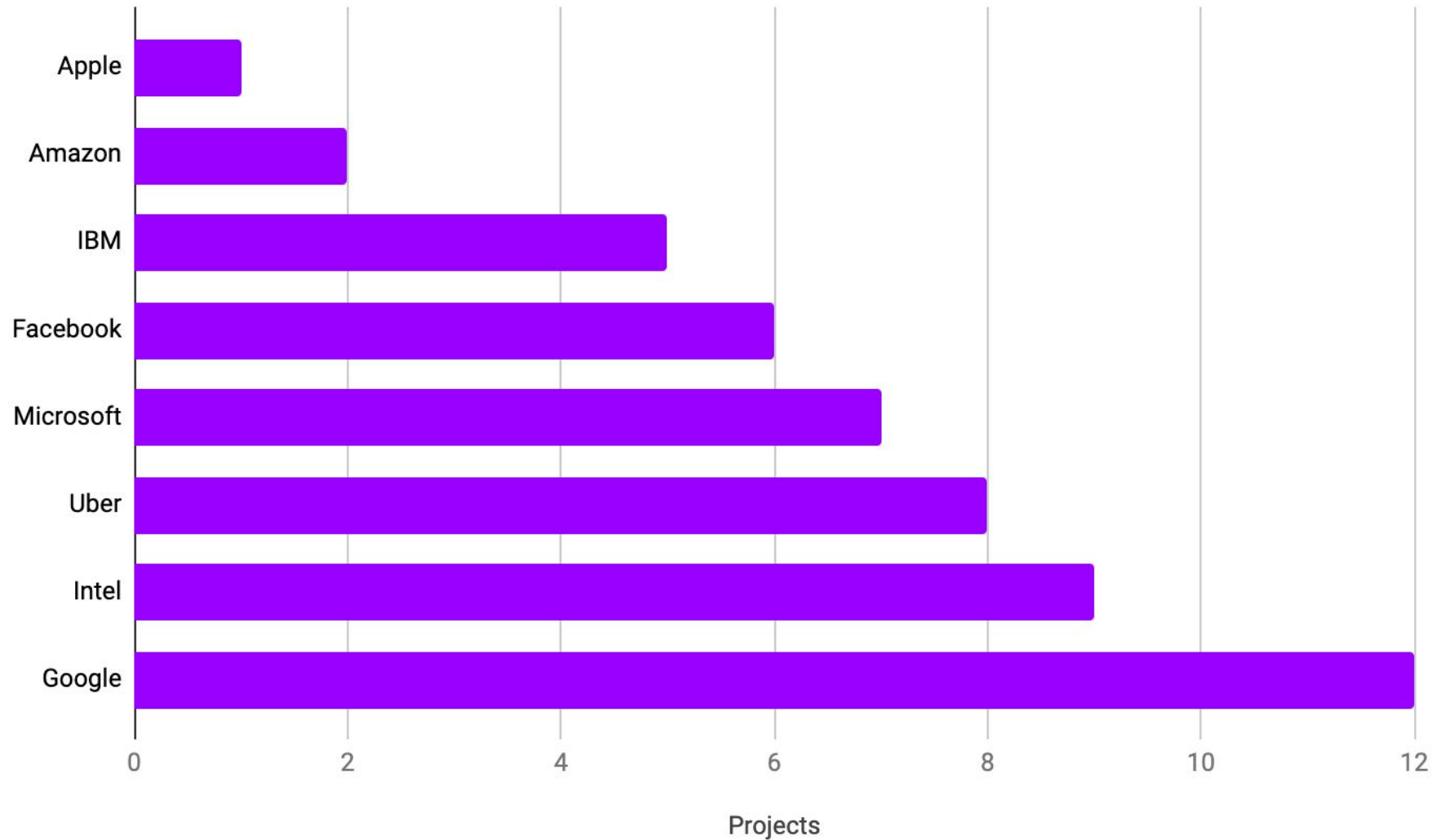
# Adopted Licenses



# Headquarters



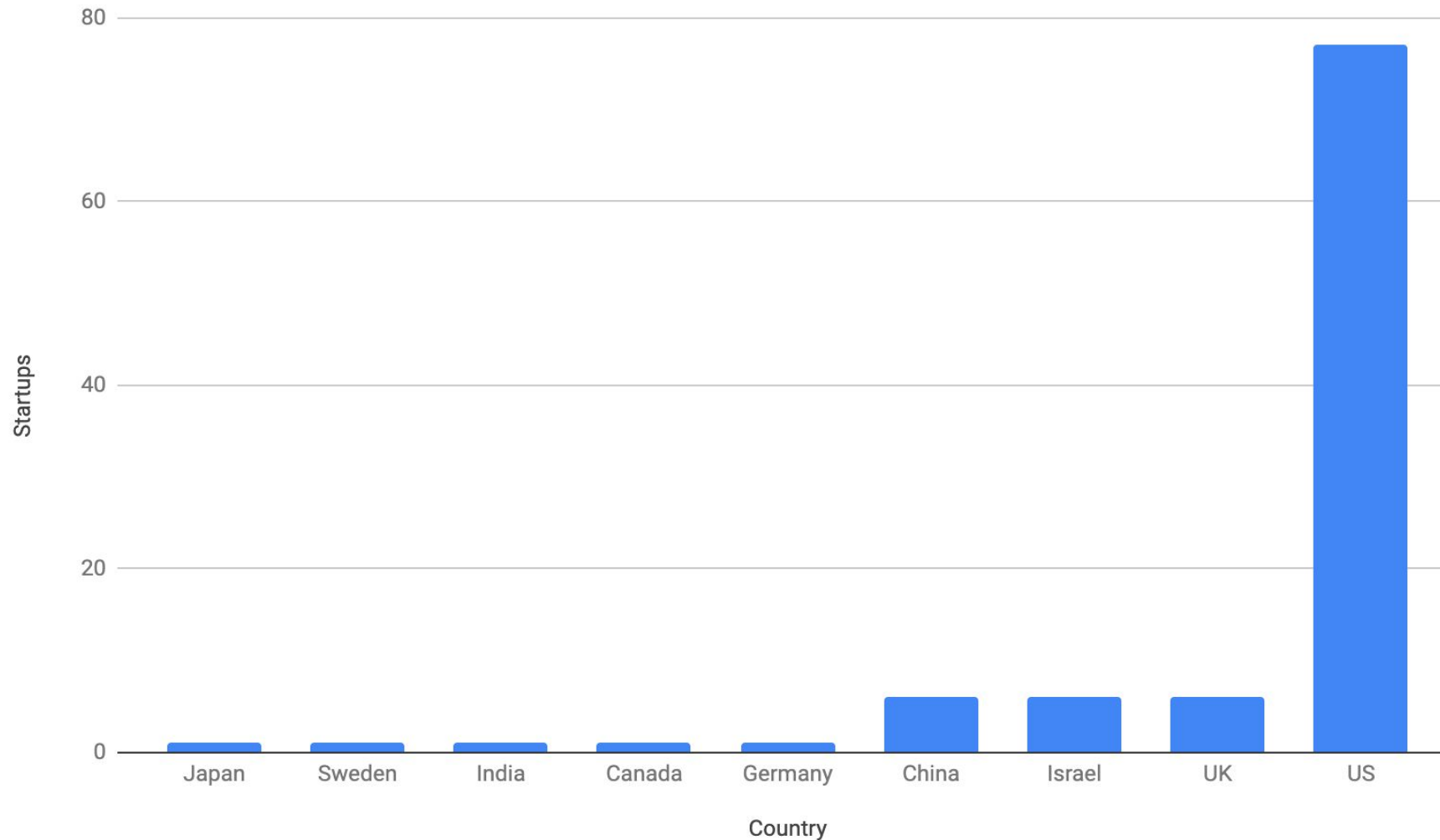
# Founding Companies





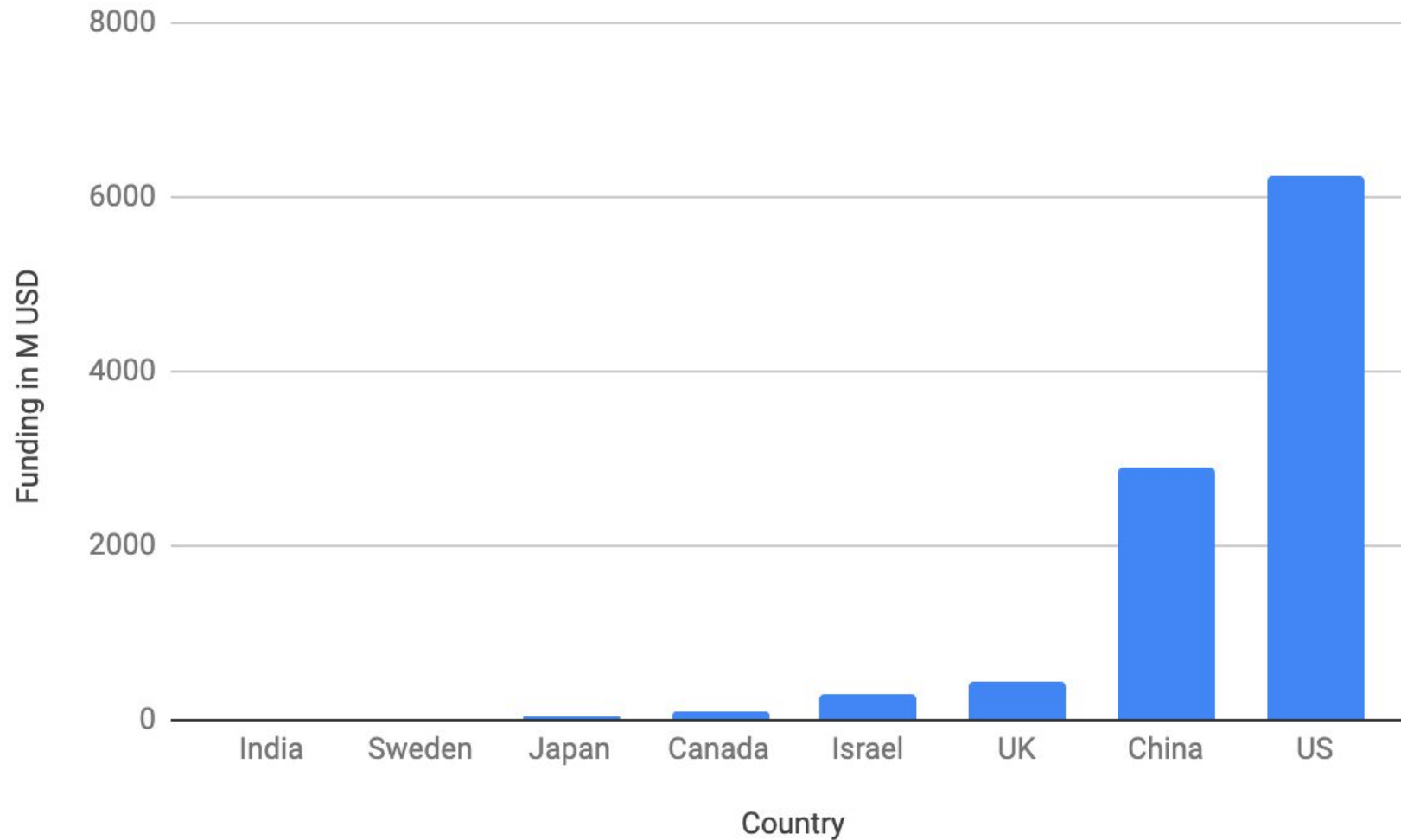
# Originating Countries for Top 100 AI Startups

(Source: CB Insights 2019 AI 100 Startups; Total finding = USD M 10,086 )



# Funding Distribution for Top 100 AI startups

(Source: CB Insights 2019 AI 100 Startups; Total finding = USD M 10,086 )





# The Hidden Race

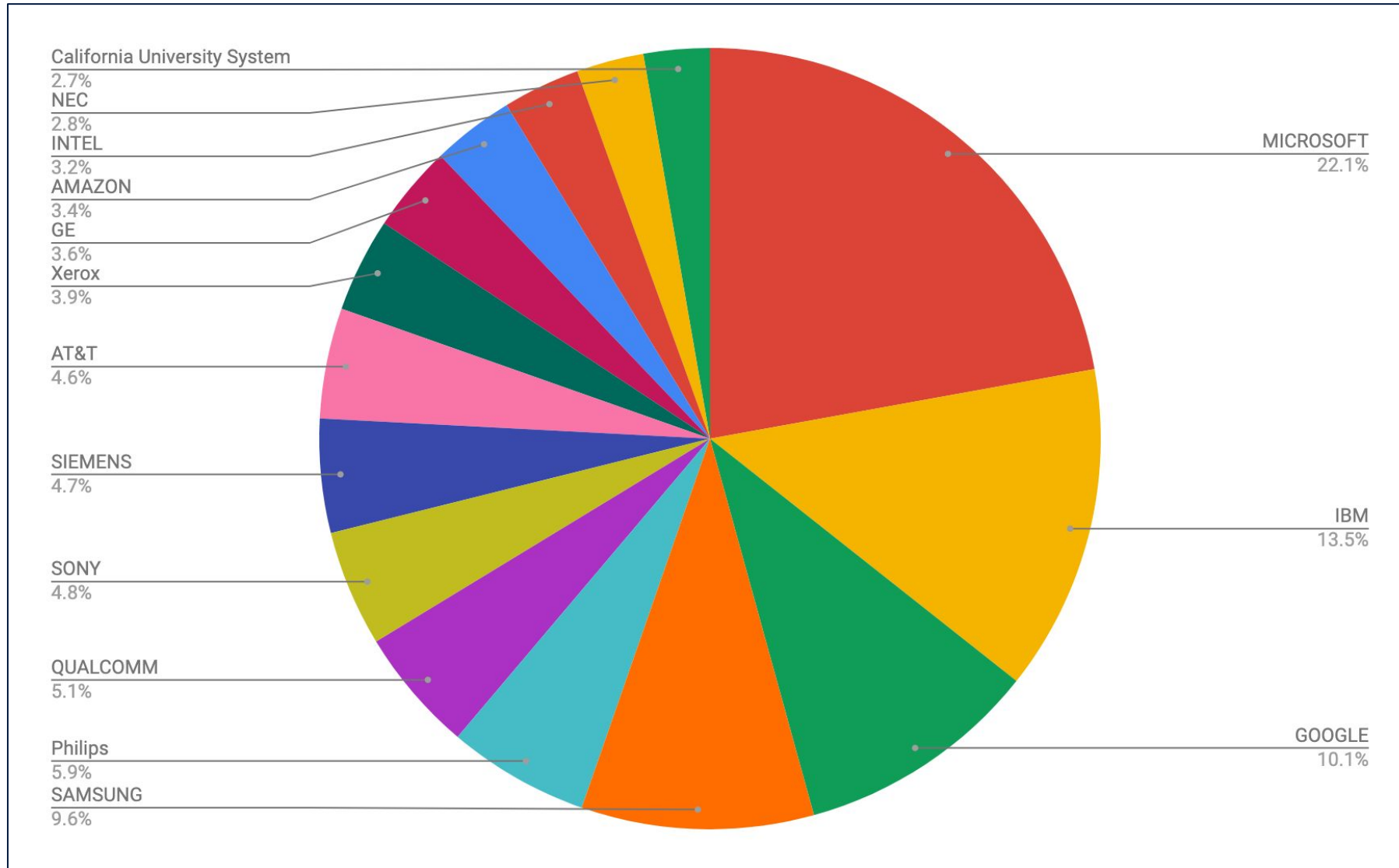




# Top AI Patentees

(2010-2018)

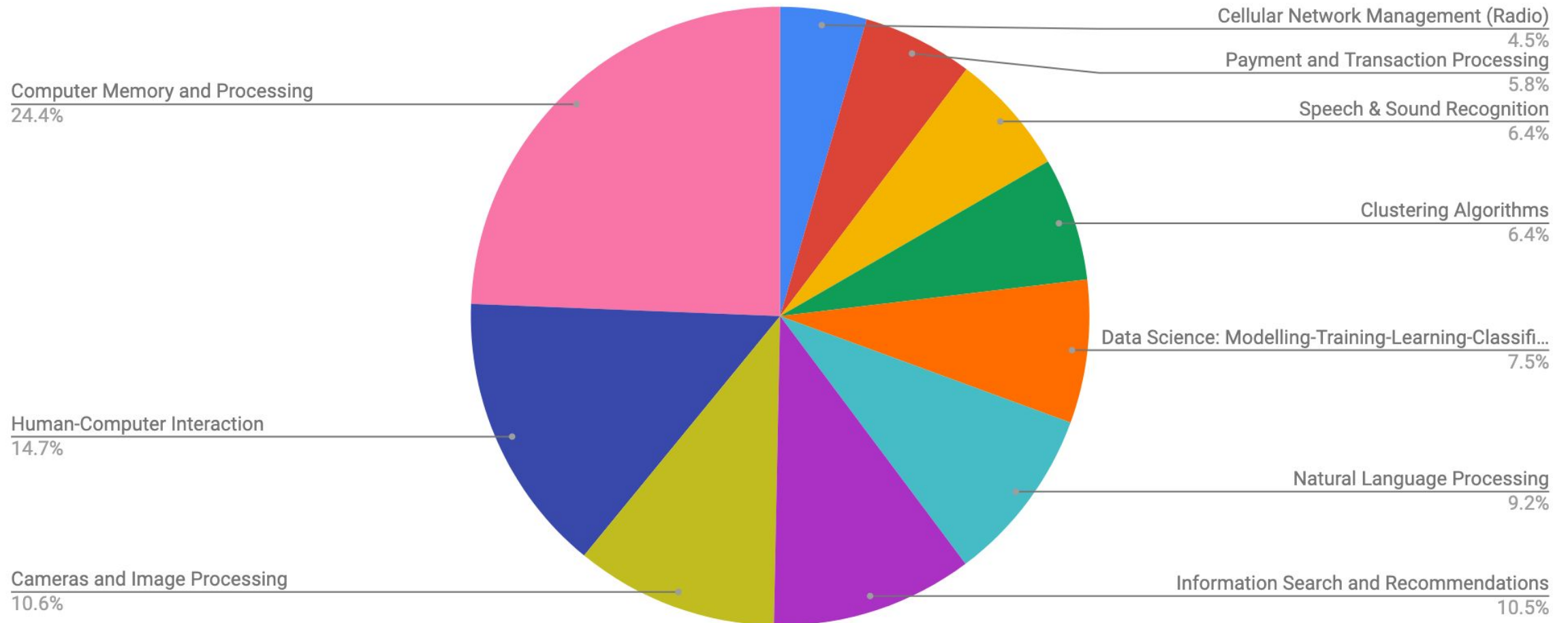
Patent data in  
collaboration with  
**TEQMINE**





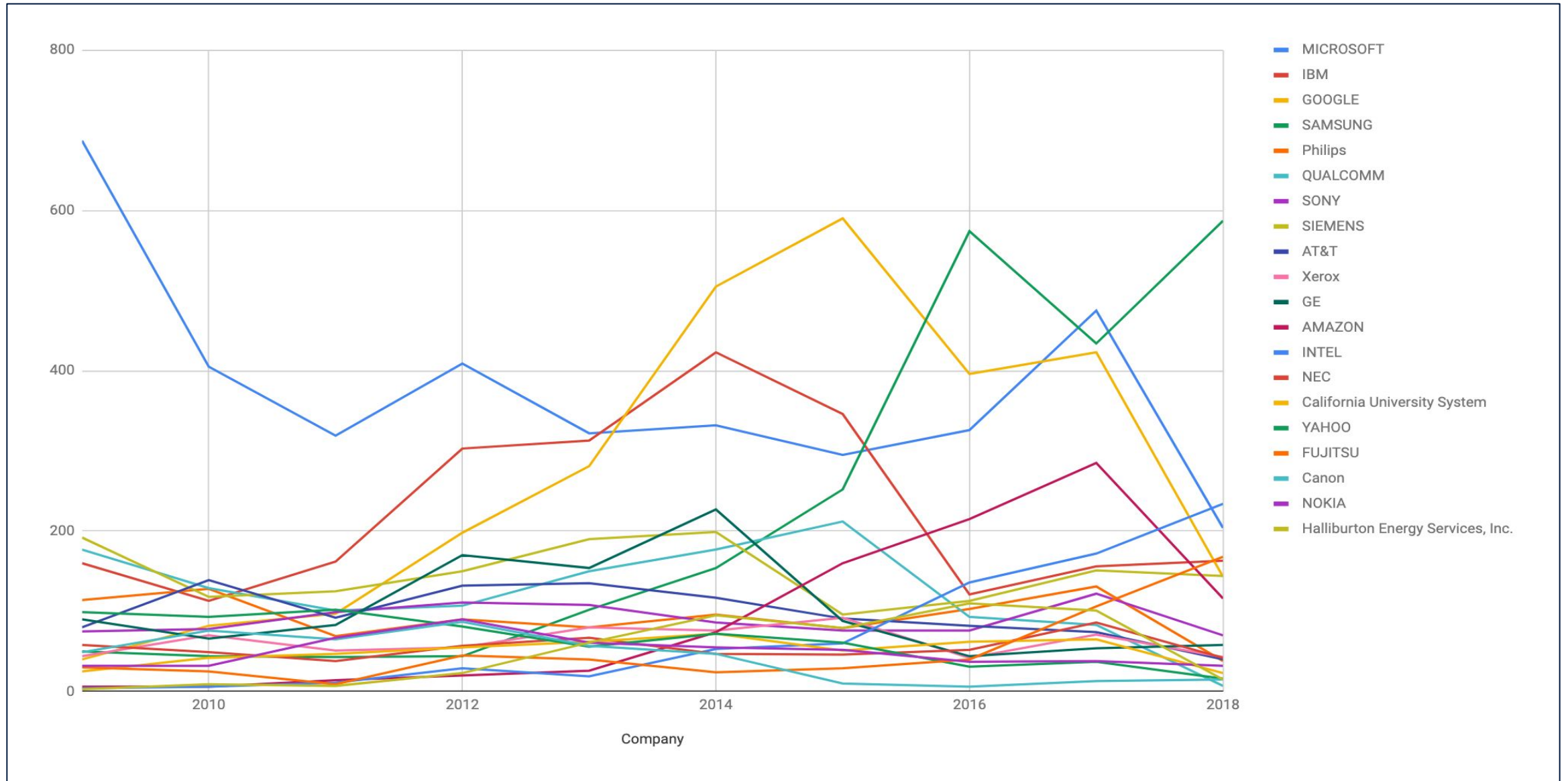
# Most AI Patented Domains

Top 10 AI Patented Domains By Top 15 Patentees (2005-2018)



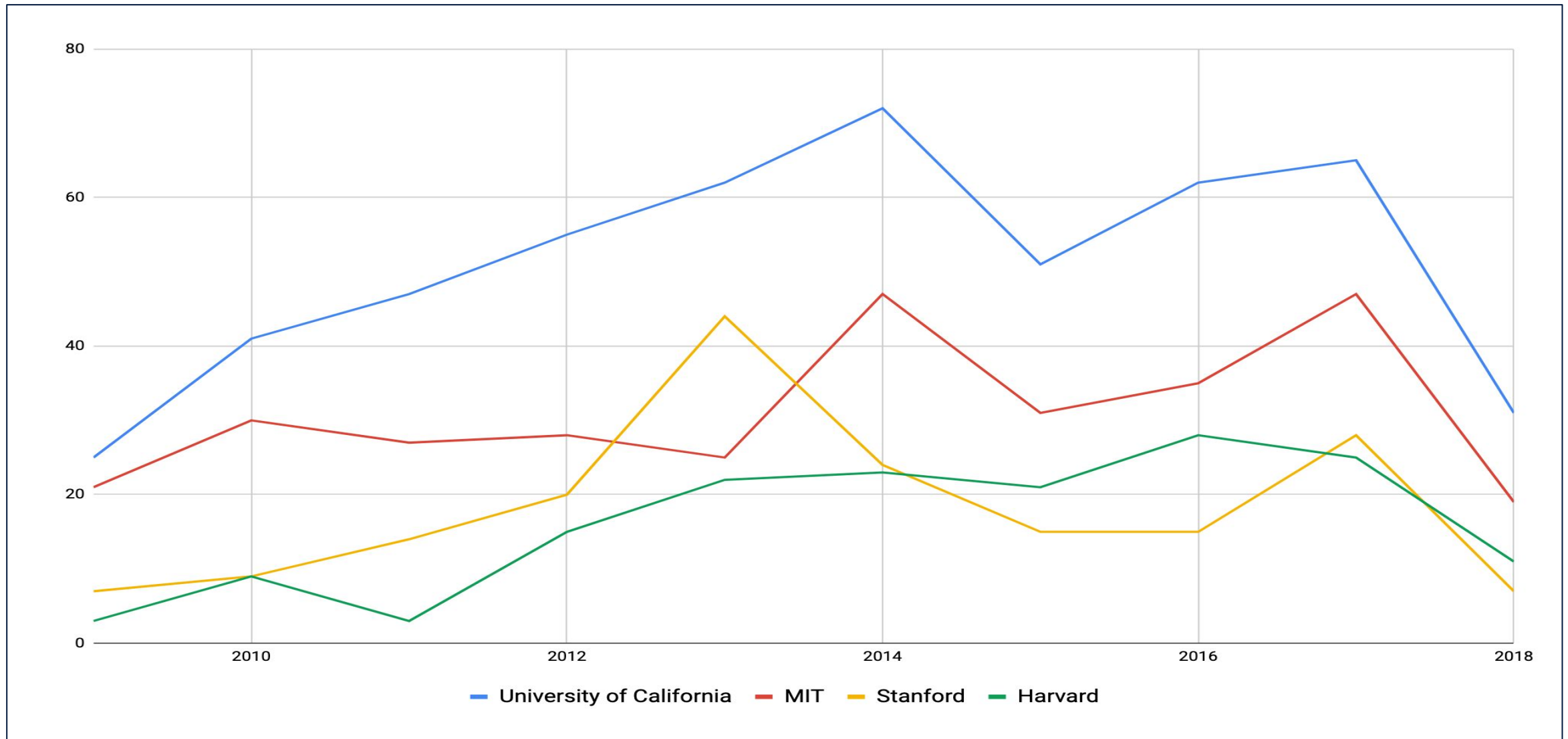
# AI Patenting Trend

Patent data in  
collaboration with  
**TEQMINE®**



# AI Patents (Top Universities)

Patent data in  
collaboration with  
**TEQMINE®**



[Free download](#)





# Accelerating AI Innovation With Open Source



**Ibrahim Haddad, Ph.D.**  
Vice President, Strategic Programs  
Executive Director, LF AI Foundation

Web: [IbrahimAtLinux.com](http://IbrahimAtLinux.com)  
Twitter: [@IbrahimAtLinux](https://twitter.com/IbrahimAtLinux)

**IBM OpenTech AI**  
Helsinki (May 6-7, 2019)