



Democratizing Big Data and AI

Power, ethics, responsibility



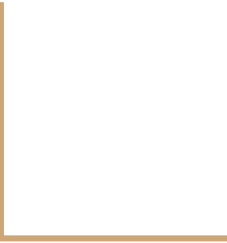
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Democratizing Big Data and AI



Fourth Industrial Revolution

Open Source
Big Data
Artificial Intelligence
IoT



Democratizing Big Data and AI



“Big Data”

Infrastructure, scalability, paradigm shift in data processing (MapReduce)

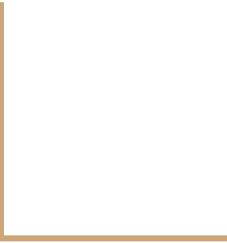
- Open Source : Hadoop, Linux, Apache Foundation,...
 - Hardware (GPUs): Gaming Technology is changing every single industry in the world
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Artificial Intelligence

Machine Learning as mainstream technology
Facebook, Twitter, LinkedIn, Google, startups...
Deep Learning results (and hype)



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IoT

Huge volumes of data (sensors) + Infrastructure + AI

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Responsibility

Ancient software engineering wisdom:
“A computer program will always do what you
tell it to do but rarely what you want to do”

Similarly,
A machine learning model will always learn from the data
you have and never from the data you think you have

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Responsibility

Things can turn really awkward really fast:

- Microsoft's AI project @TayAndYou shut down
- Artificial Intelligence “White Guy Problem” [1]
- Train world-wide models and ignoring minorities
- Horses and Potemkin Villages: The “Tank Detector” [2]

<http://www.nytimes.com/2016/06/26/opinion/sunday/artificial-intelligences-white-guy-problem.html>

<http://c4dm.eecs.qmul.ac.uk/horse2016/>

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Responsibility / ethics

Allowing machines to make live or death decisions

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- Self driving cars : Making decisions on accidents
- Autonomous weapon systems : Selecting targets without human intervention

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Responsibility / ethics

IoT

Adversarial Machine Learning

Humans are Intelligent and adaptive adversaries

Eg exploiting vulnerabilities of machine learning algorithms in biometrics

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Conclusion

IoT: Industrial revolution in progress

Exciting times for Machine Learning and Artificial Intelligence

- We need to think carefully when training and deploying a machine learning model
 - Think twice if the model has world-wide scope

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- Thanks & Questions

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