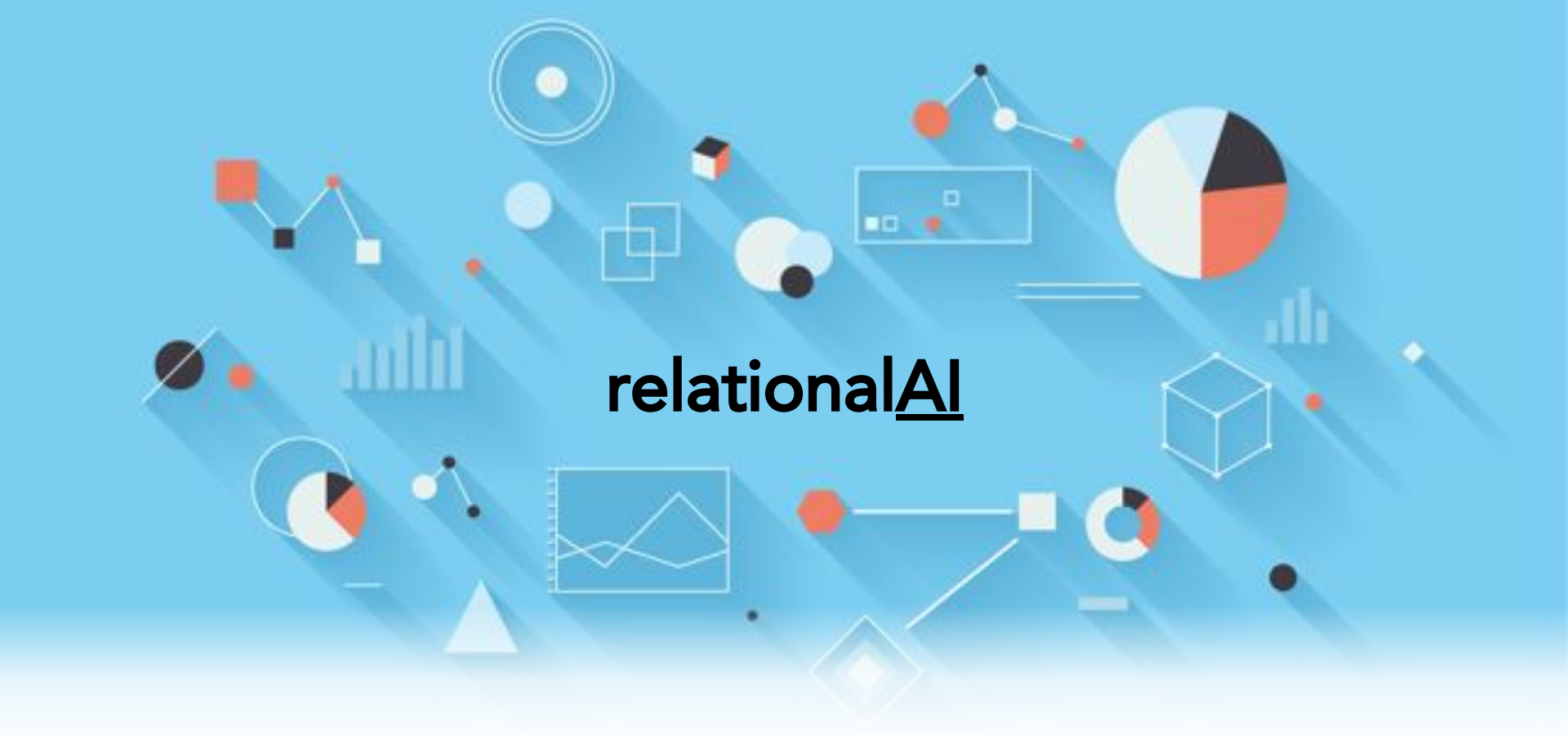
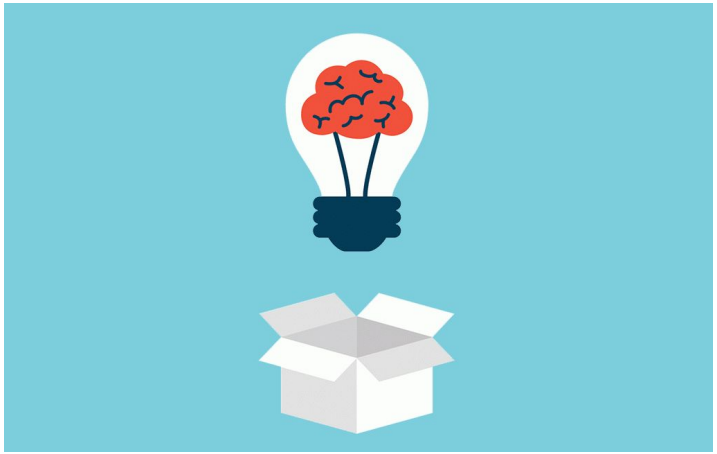


Leveraging the tightly connected aviation ecosystem for AI based maintenance

Nikolaos Vasiloglou

Thinking outside of the Box

Ridiculous



Productive

Amazon acquires Delta Airlines for 50Billion $

Delta stock has been withdrawn from the stock market charts

CBSNEWS.US

Amazon acquires Delta Airlines for 50Billion $

Delta stock has been withdrawn from the stock market charts

CBSNEWS.US

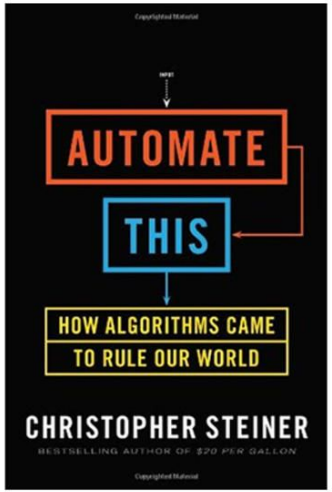
But this is not fake

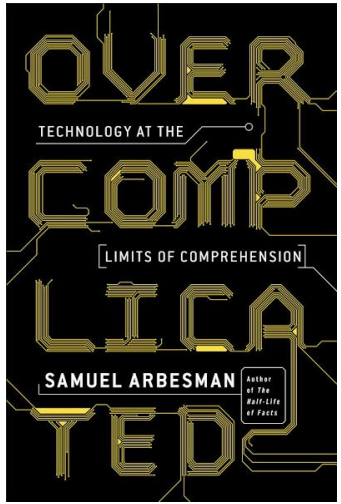
We don’t believe an airline should be a software company…..

- Is Nvidia a software company?
- Is Intel a software company?
- Is Pfizer a software company?
- Is Uber a software company?
- Is Airbnb a software company?
- Is Netflix a software company?
- Is JP Morgan a software company?

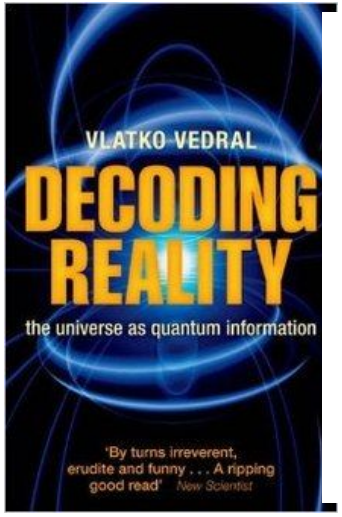
Why can Uber sell food and Delta can't sell parcel delivery services?

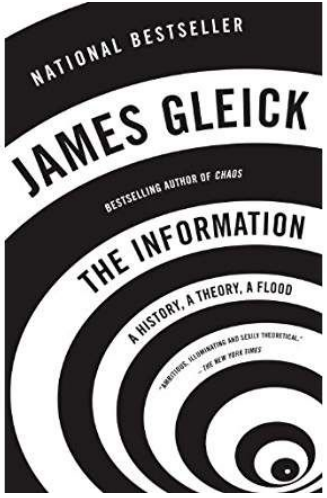
- Why does Amazon have its own delivery service?
- Why American doesn't have a retail service?

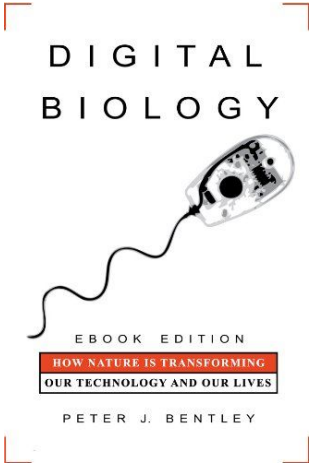


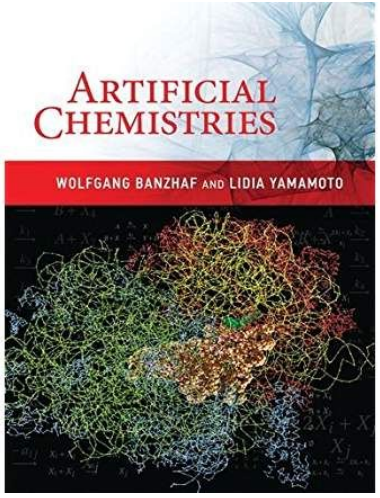


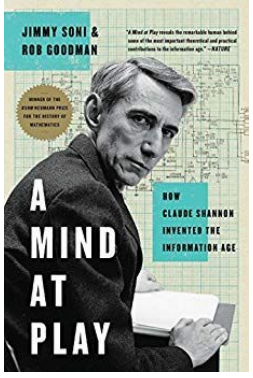
It is deeper all the sciences become digital

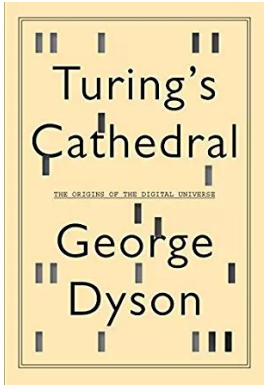












Why aren't OEMs or Airlines a software company yet?

- Airplanes are not a commodity product!!
- There is still a lot of complexity
  - Technical
  - Regulatory
- But they will become commodity soon….
- So get ready, start by leveraging data!

First things first, who owns the data?

Data battles existed before aviation

How was it sorted out?

- Competition. Data auctions
- Exchange platforms
- What pushed companies to coopetition?
- Bypassing and breaking monopolies
- Using proxies and noisy data that broke exclusivities
- Google Map -> Street View
- Traffic cameras -> Waze
- Credit card transactions -> Cell Phone location data
- Hospital data -> Google search frequency for Flu

Accurate or Noisy data?

- Unfortunately accurate data are expensive
- But noisy data can be cheap

Big Noisy data = Accurate data

?

Big Noisy data = Useful data

Let's get this party started!

What can the airlines collect?

12:03
Xperia Z
GALAXY Note II

HERO4

What can you learn from people's smartphones

- Every person is a sensor
- Camera
- Accelerometer
- Microphone
- Wifi signal strength
- GPS

Signals + AI

- Bumps, sudden movements of the aircraft
- Vibrations
- Weight and height of the passengers
- Level of discomfort
- Temperature

How heavy is your airplane?

Weigh-In-Motion System Using a MEMS Accelerometer

Ravneet Bajwa
Pravin Varaiya

Electrical Engineering and Computer Sciences
University of California at Berkeley

Technical Report No. UCB/EECS-2009-127
http://www.eecs.berkeley.edu/Pubs/TechRpts/2009/EECS-2009-127.html

September 1, 2009

Forbes

Billionaires Innovation Leadership Money Consumer Industry

Detect How Fit (Or Fat) You Are

Kashmir Hill Forbes Staff
Welcome to The Not-So Private Parts where technology & privacy collide

Gary Weiss and his Fordham students developed an Android app that can tell if you're getting chunky

Your smartphone knows whether you're fat or not. That's what I learned from talking to Gary Weiss, a professor at Fordham University, who has been working on using smartphone sensors for mining data about their users. He and his students have developed an Android app that can determine how active you are, how tall you are, and how much you weigh. And the app doesn't need access to any more information from your phone than the Fandango app asks for.

MORE FROM FORBES

FORBES INSIGHTS
Why A Modern IT Infrastructure Is The Cornerstone Of Data-Driven Enterprises

Grads of Life BRANDVOICE
How Genesys Works Is Working For Its Alumni

UNICEF USA BRANDVOICE
In Praise Of Breastfeeding: A Mother's Gift For Every Child

To track the state of your fitness, an app just needs to be able to keep your phone from going to sleep. So how does it work? Gary Weiss's Actitracker

What is the basic principle?

- Given some training data you can discover how
  - certain events correlate with smartphone sensors
- You don't need to always understand the underlying physical mechanism
- For example movement of people in a room changes with respect to temperature.
- You can build your own thermometer from the accelerometer data and location data!!
- You can also use crowdsourcing to extract any information

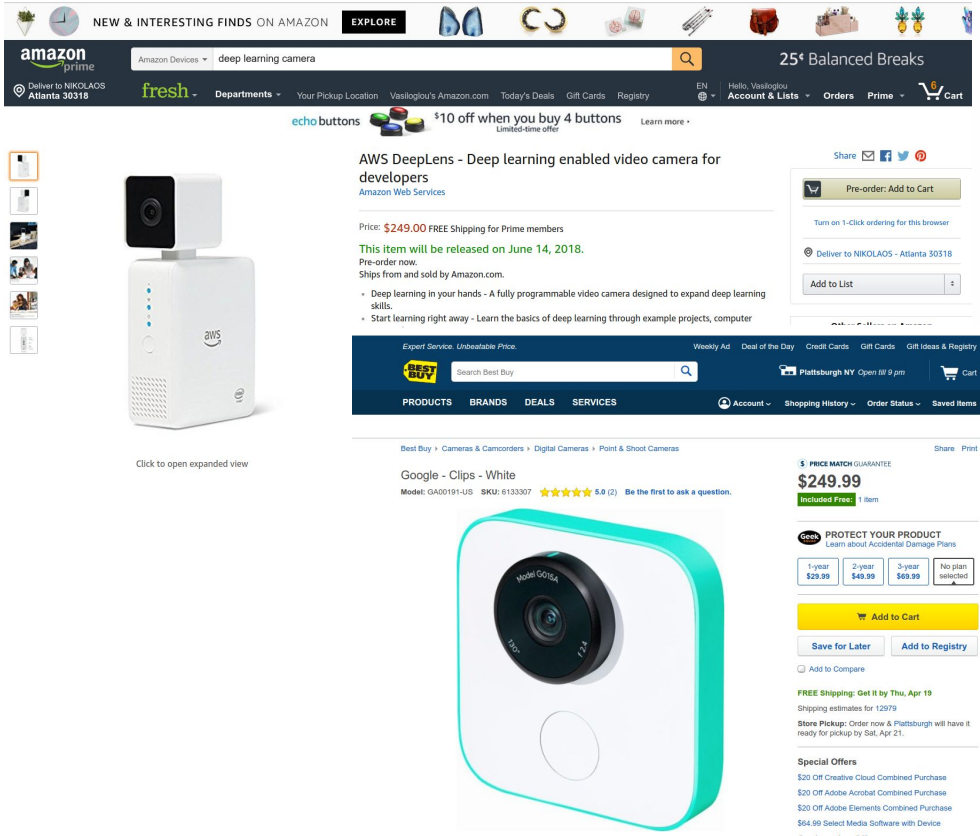
Could this have been avoided?

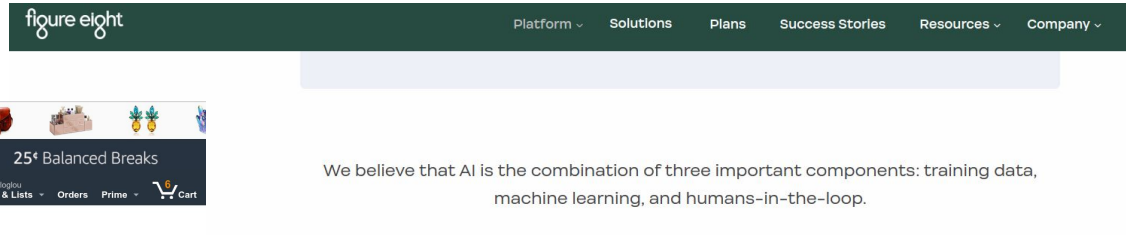
Getting your flight data

Read your instruments

Record obstacles as you take off

Order it now online





Non invasive monitoring

FLIR

APPLICATIONS PRODUCTS DISCOVER SUPPORT NEWS ABOU

FLIR ONE Gen 3

MODEL: FLIR ONE GEN 3 - ANDROID (USB-C)

Go to Support Page »

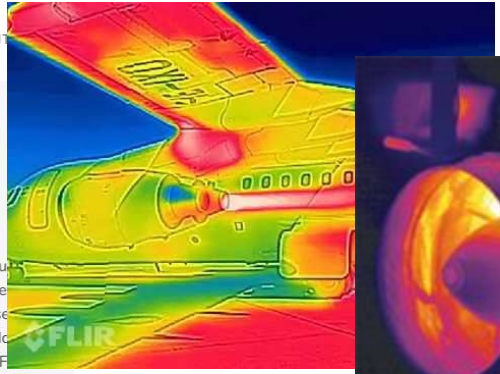
There's an invisible world right next to the one you see every day, ju
waiting for you to explore it with the FLIR ONE. Whether you're see
world in a while new way or just finding problems around the house
ONE's thermal camera gives you a new view of your everyday worl
Discover what's been around you all the time, with FLIR ONE. The F
ONE app requires sign in, which enables automatic warranty registration
and access to all the latest updates from FLIR.

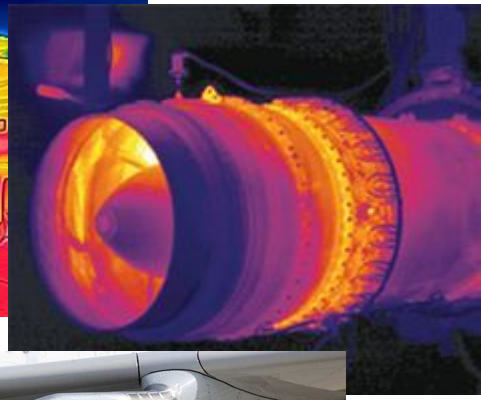
PRODUCT VARIATIONS:

FLIR ONE Gen 3 - Android (USB-C)

$199.99

BUY NOW



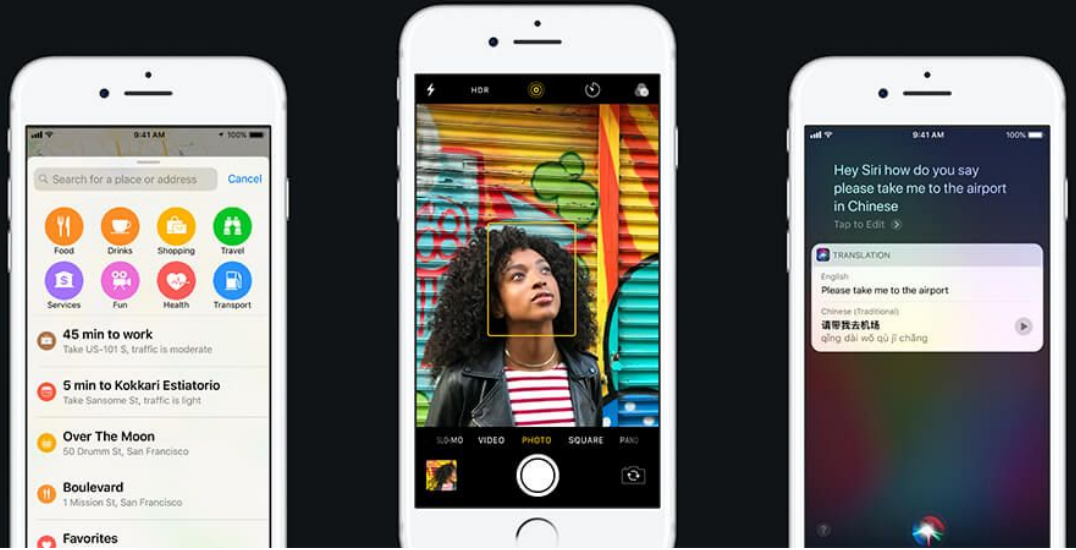


Google knows if you have a hard landing!

Run your models on iphones

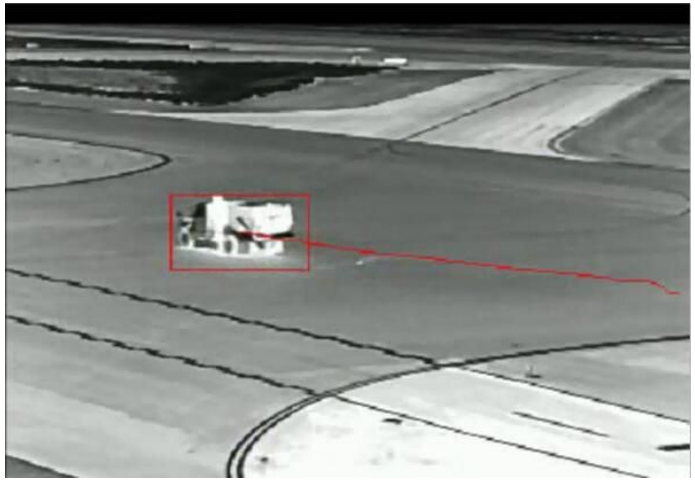
Core ML (Machine Learning)

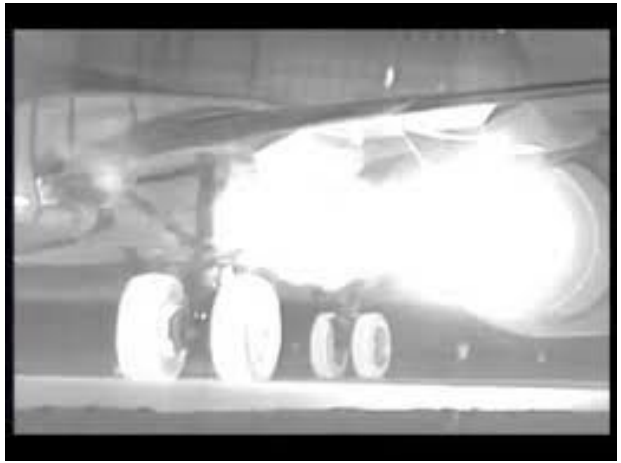
The new Core ML framework API will make it easy for developers to run machine learning models on Apple devices.



The aircraft manufacturers can steal data from the engine manufacturers

Airports can steal data too





Are your engineers smarter than a farmer?

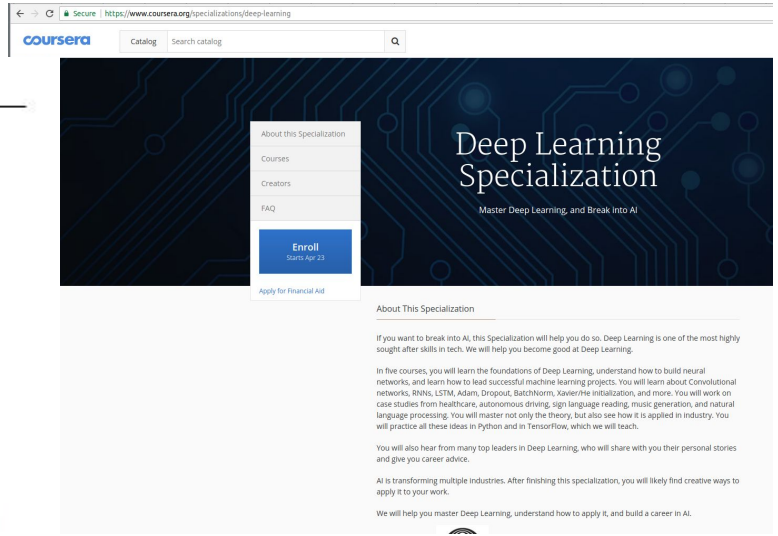
Cucumber Classification with TensorFlow

- A cucumber farmer built an original "Cucumber sorter" using TensorFlow.
- Client application running on RasPi works with the Aruduino Micro to control the belt conveyor and the sorting devices.

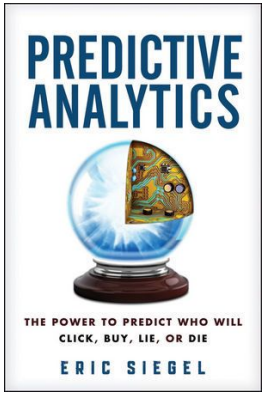
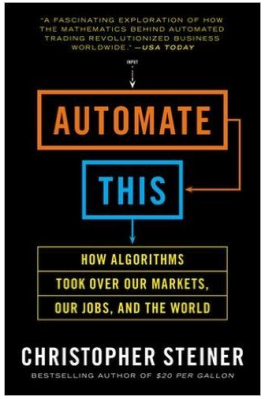
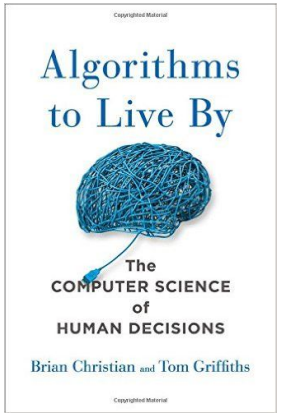
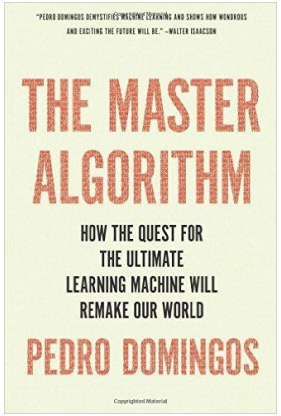
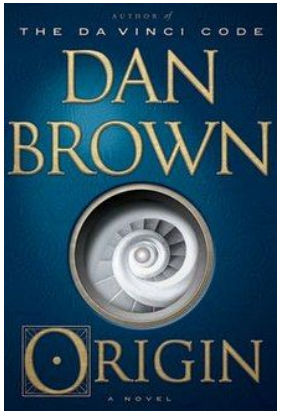
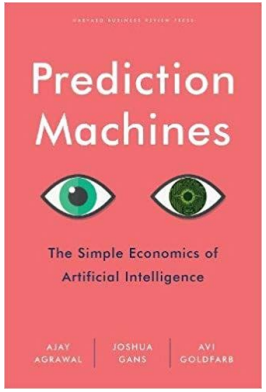
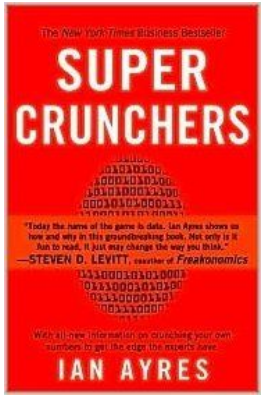
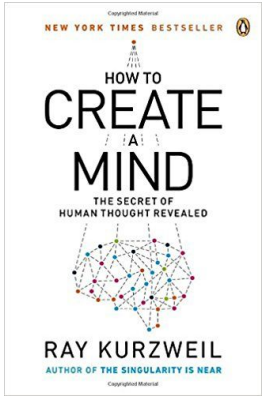
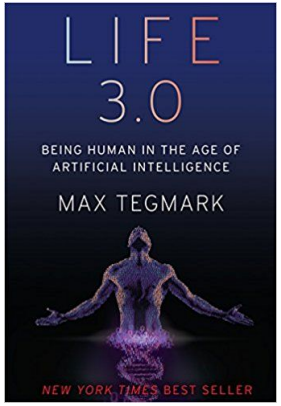
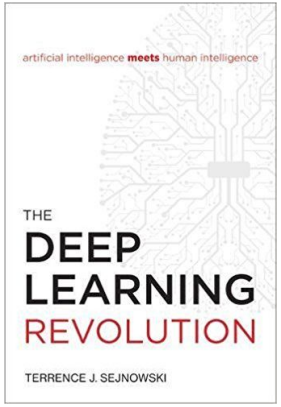
TensorFlow

https://cloud.google.com/blog/big-data/2016/08/how-a-japanese-cucumber-farmer-is-using-deep-learning-and-tensorflow

Come find me and I will teach your engineers how to do it



MLTRAIN

www.mltrain.cc

Change the Culture. Educate yourself and your Executives