

Leveraging the tightly connected aviation ecosystem for AI based maintenance

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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Delta stock has been withdrawn from the stock market charts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



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But this is not fake



With its \$13.7 billion acquisition of Whole Foods, Amazon.com acquires a national brick and mortar retailing infrastructure with opportunities to blend online and in-store sales and delivery.





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











11 11 Turing's Cathedral George 11 Dyson 111

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?



What can you learn from people's smartphones



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

Signals + Al

Bumps, sudden movements of the aircraft

10

.....

- Vibrations
- Weight and height of the passengers
- Level of discomfort
- Temperature



How heavy is your airplane?



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

Your smartphone knows whether you're fat or not. That's what I learned from talking to Gary Weiss, a professor at Fordham

in 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



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

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.

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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?





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The aircraft manufacturers can steal data from the engine manufacturers





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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



Change the Culture. Educate yourself and your Executives







The Simple Economics of Artificial Intelligence







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