

Starting your AI/ML project right

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Does AI have a massive future? Sure! Please insert another coin.

Do we (the builders) have a **clear** idea how to get there? Hmmmm.

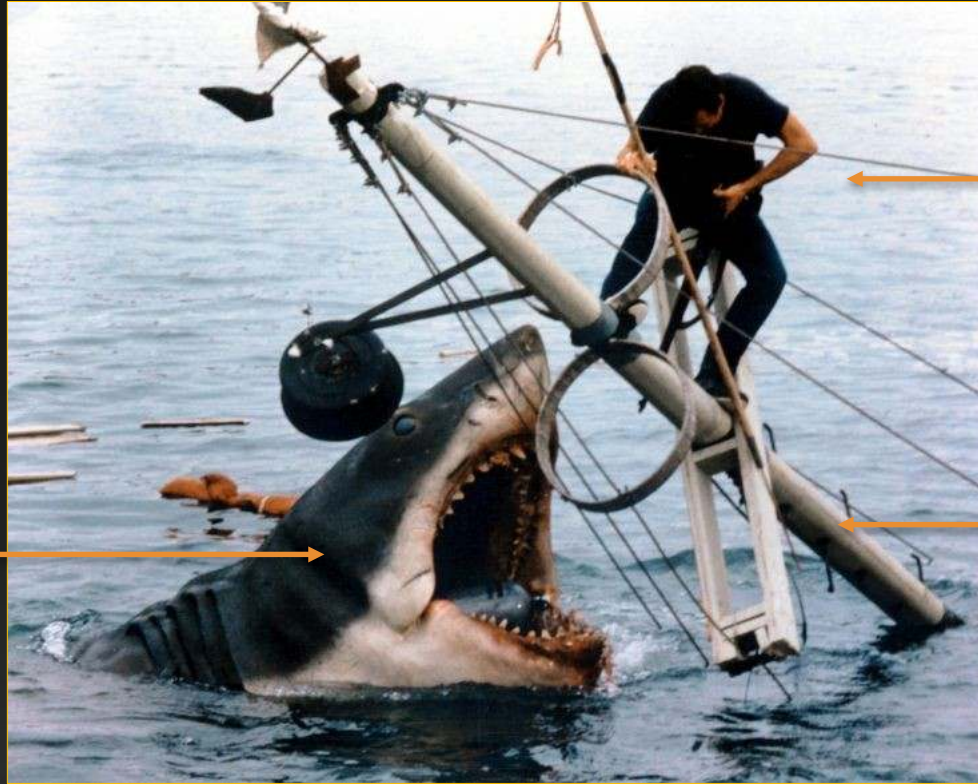
***« If you want to know the future,
look at the past »***

Albert Einstein

What's our collective track record on understanding
and implementing disruptive technologies?

2000

Your
competitor



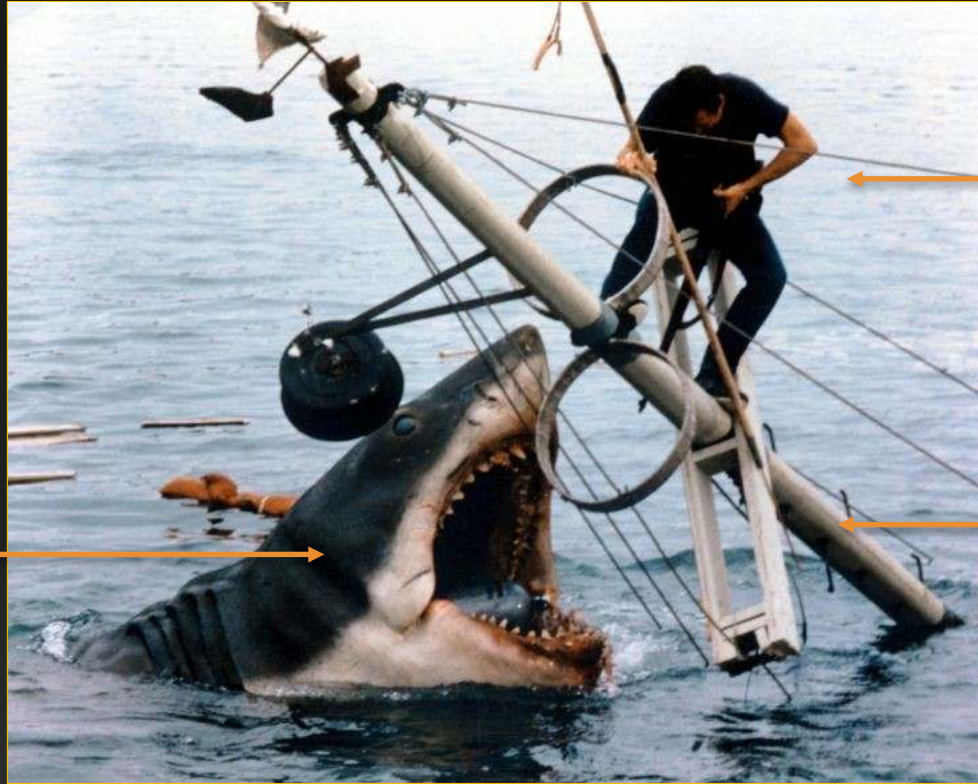
You

Your
Web
project

Universal
Pictures

2005

Your
competitor



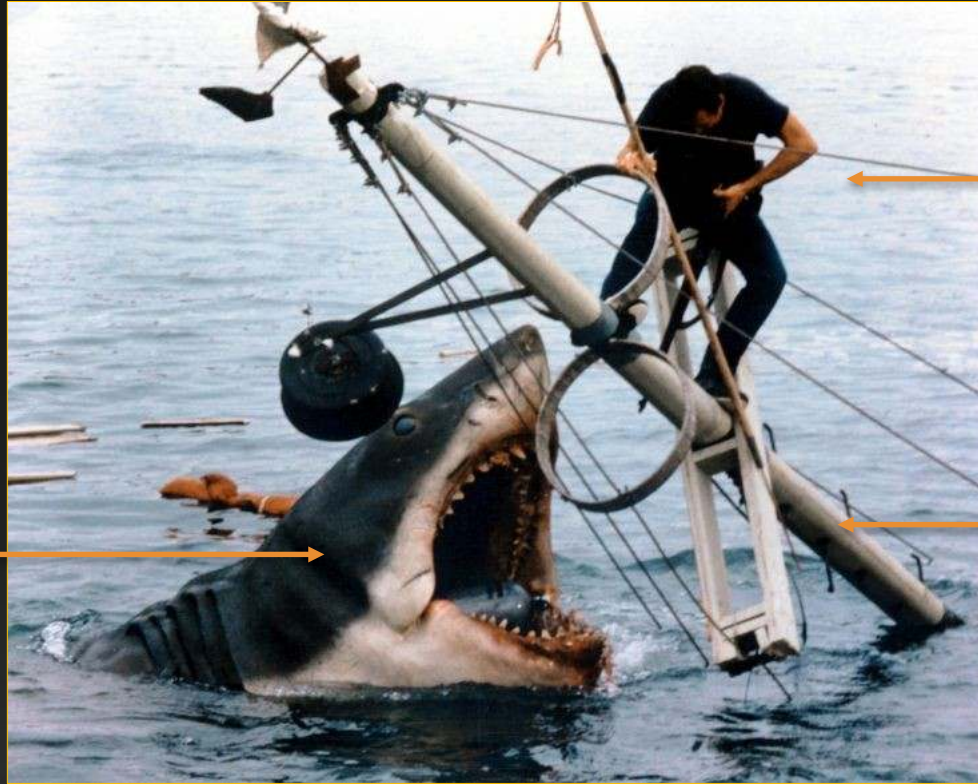
You

Your
E-commerce
project

Universal
Pictures

2010

Your
competitor



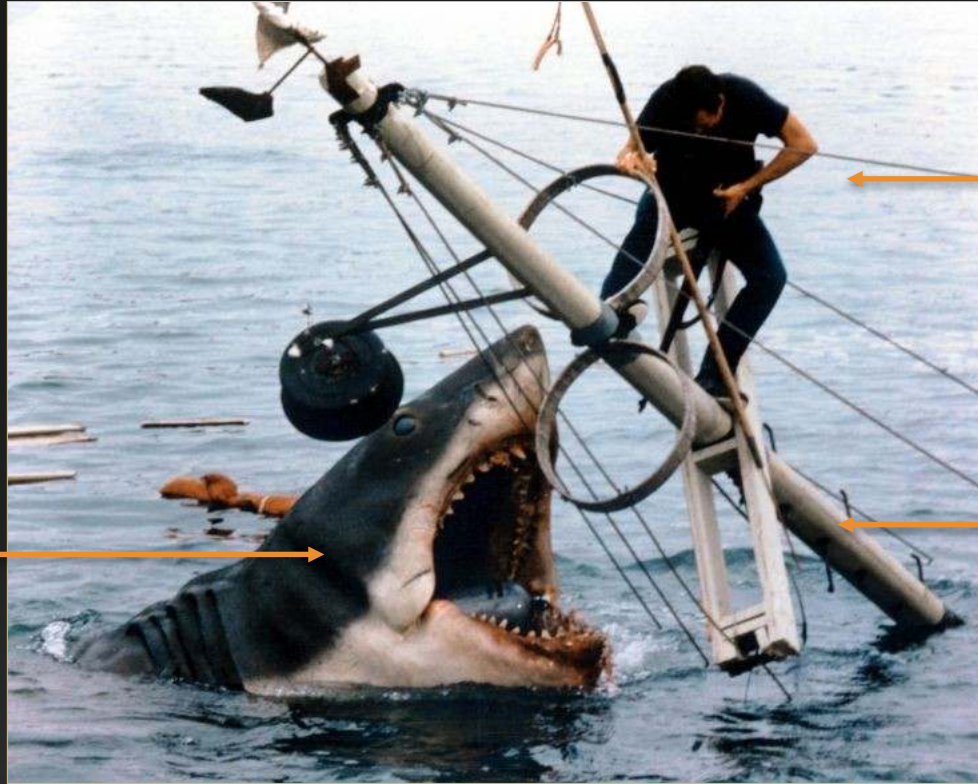
You

Your
M-
commerce
project

Universal
Pictures

2015

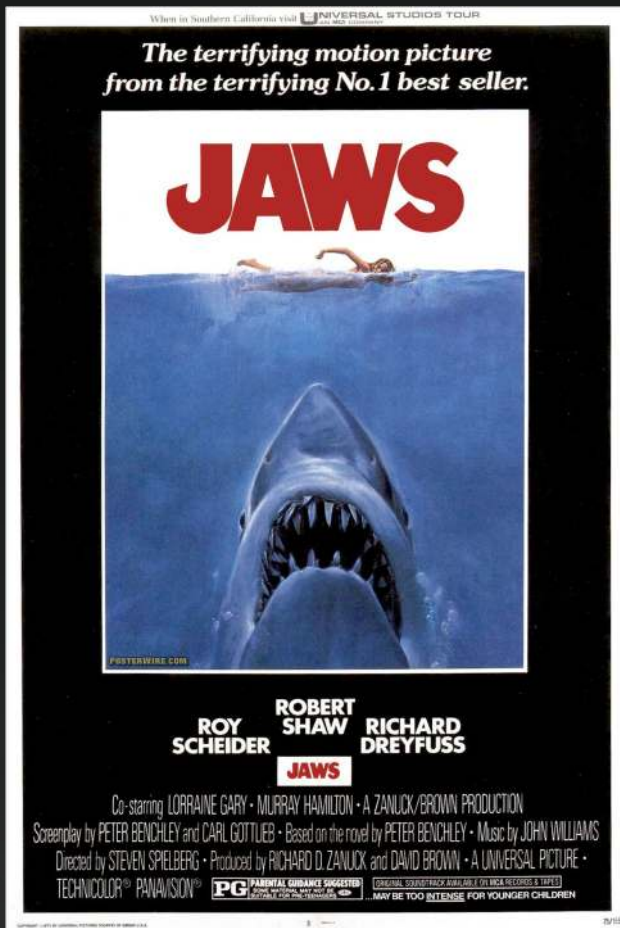
Your
competitor



You

Your
Big
Data
project

Universal
Pictures



The terrifying truth about tech projects

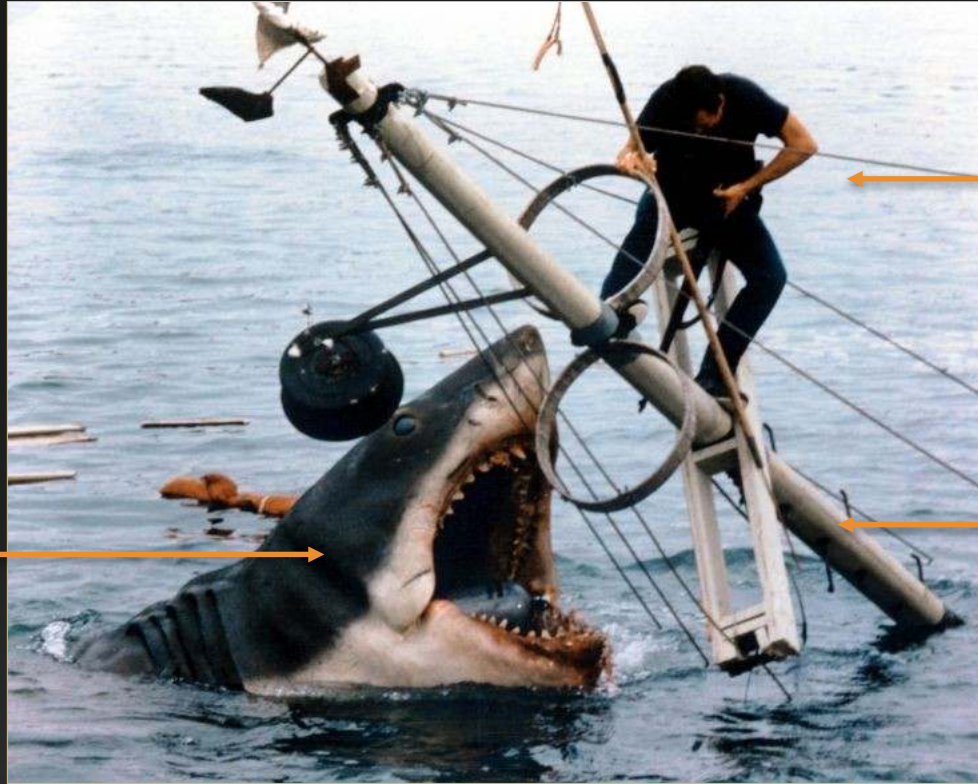
Delusional stakeholders
Business pressure
Unprepared team
Inadequate tools
Improvised tactics
Random acts of bravery

***« It's different this time!
The AI revolution is here!
Blah blah blah »***

You know who

2020

Your
competitor



You

Your
AI / ML
project

Universal
Pictures

« Insanity is doing the same thing over and over again and expecting different results »

Whoever said it first

Tired of being shark food?

Delusional stakeholders
Business pressure
Unprepared team
Inadequate tools
Improvised tactics
Random acts of bravery



Set expectations
Define clear metrics
Assess your skills
Pick the best tool for the job
Use best practices
Iterate, iterate , iterate

1 - Set expectations

- What is the **business** question you're trying to answer?
 - One sentence on the whiteboard
 - Must be **quantifiable**
- Do you have (enough) **data** that could help?
- Involve everyone and come to a **common** understanding
 - Business, IT, Data Engineering, Data Science, Ops, etc.

« We want to see what this technology can do for us »

« We have tons of relational data, surely we can do something with it »

« I read this cool article about FooBar ML, we ought to try it »



2 - Define clear metrics

- What is the **business metric** showing success?
- What's the **baseline** (human and IT)?
- What would be a **significant** and **reasonable** improvement?
- What would be **reasonable** further improvements?

« The confusion matrix for our support ticket classifier has significantly improved ». **Huh?**

« P90 time-to-resolution is now under 24 hours ». **Err....**

« Misclassified emails have gone down 5.3% using the latest model ». **So?**

« The latest survey shows that 'very happy' **customers** are up 9.2% ». **Woohoo!**

3 - Assess needs (not wants) and skills

- Building a data set describing the problem?
- Cleaning and curating it?
- Writing and tweaking ML algorithms?
- Managing ML infrastructure?

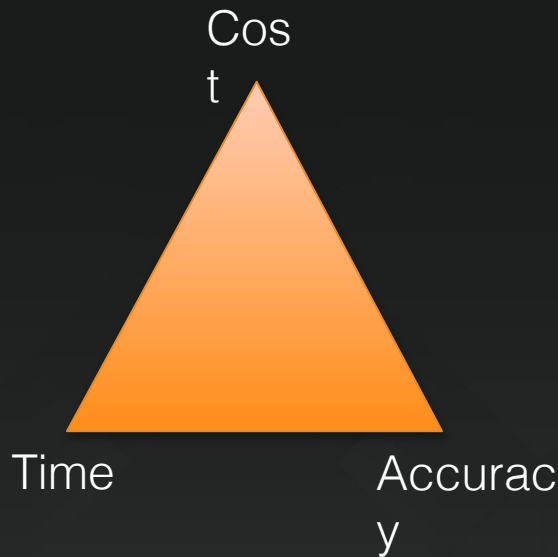
Fully
manage
d



100%
DIY

4 - Pick the best tool for the job

- Cost, time to market, accuracy: **pick two**
- The least expensive and fastest option won't probably be the most accurate.
 - Maybe enough to **get started**, and **learn** more about the problem.
- Improving accuracy will take **increasingly** more time and money.
 - Diminishing returns! Know when to stop.
- Keep an eye on **actionable** state of the art advances, ignore the rest
 - Transfer learning
 - AutoML



5 - Use best practices

- No, things are **not** different this time.
- AI / ML is **software engineering**
 - Dev, test, QA, documentation, Agile, versioning, etc.
 - Involve all teams
- Sandbox tests are nice, but truth is in **production**
 - Get there fast, as often as needed
 - CI / CD and automation are required
 - Devops for ML



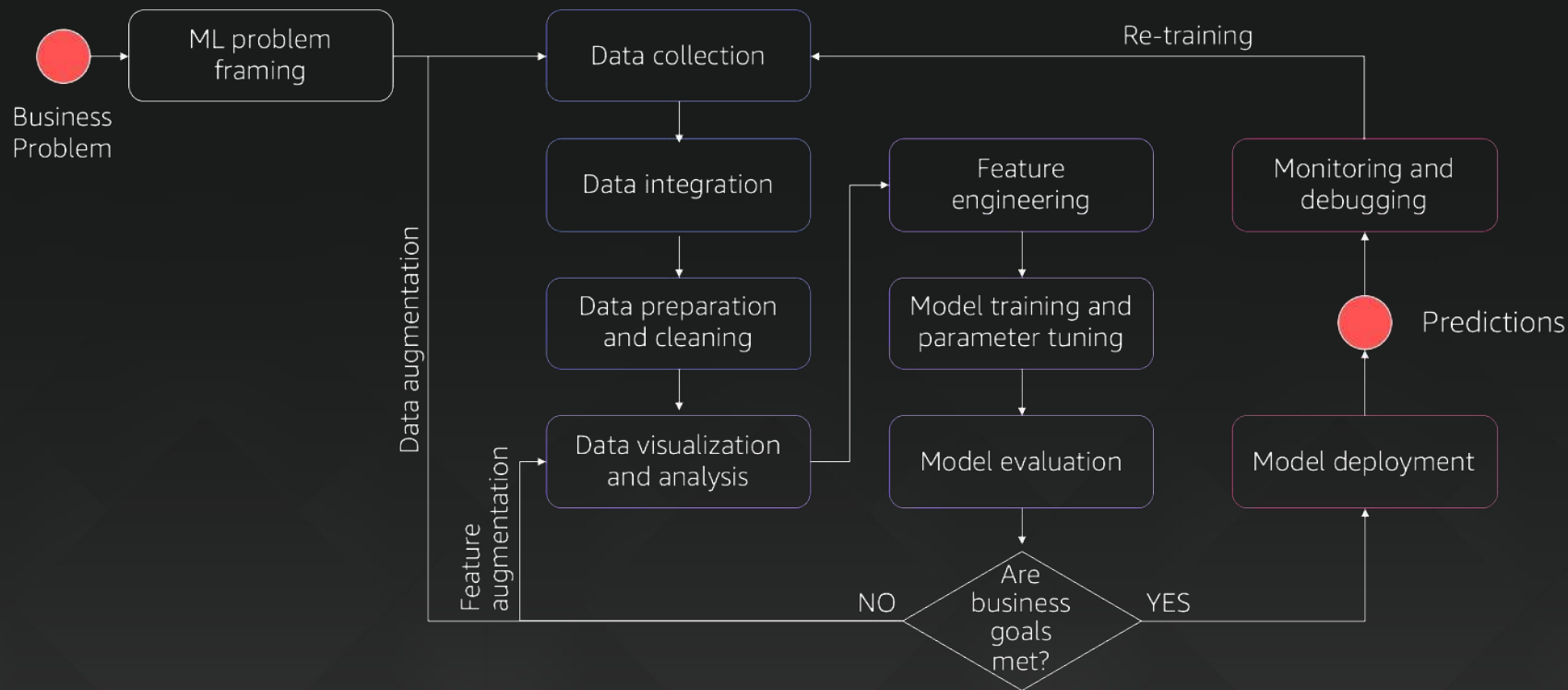
Universal
Pictures

6 - Iterate, iterate, iterate

aka Boyd's Law (1960)

- Start **small**
- Try the **simple** things first
- Go to production **quickly**
- Observe prediction **errors**
- Act: fix data set? Add more data? Tweak the algo? Try another algo?
- Repeat until accuracy gains become **irrelevant**
- Move to the **next** project

6 – Machine Learning *is* an iterative process



« *Does this work?* »

Everyone in this room

AI and Machine Learning on AWS

Tens of thousand of active customers – all sizes, all verticals



https://ml.aws

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