DevOps for Data Science (DataOps)

With Azure DevOps, Docker and Kubernetes

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Microsoft Partner
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*We **enable** our **clients** make **sense** of their **data***

DATA ARCHITECTURE

MANAGED SERVICES

DATA STRATEGY

DATA SCIENCE

DATA MANAGEMENT

DATA ANALYTICS

Where to find the ***slides*** and ***demos***

https://github.com/SQLShark

Questions?

Shout them out!!

Who is a ***Data Scientist***?

Who is a ***Software developer***?

In this session we will look to understand what a Data scientist does ***well*** and what they do ***badly***

We will explore the history of ***DevOps***. We will look at the core components and how they relate to ***machine learning***.

We will learn then look at how we can hook this all together with a demo of ***Azure DevOps***, ***Python***, ***Docker*** and ***Kubernetes***

"Productionisation of models is the ***TOUGHEST*** problem in data science"

Schutt, R & O'Neill C, 2014. Doing Data Science Straight From the Front Line, O'Reilly Press. California

But why?


R

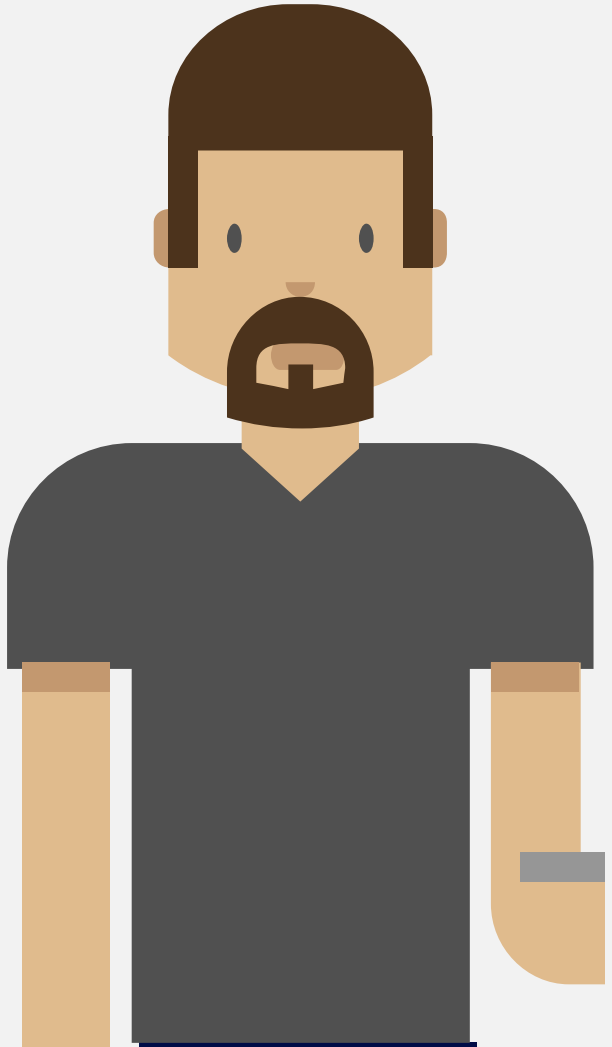

julia


Scala


MATLAB


SQL

Data Scientist



Highly Academic
Statistically minded
Particularly strong in ML languages
Not from a software background
Thinks testing is hard
Doesn't use source control
Thinks deployments are the responsibility of another team

Models are not in production

How do we fix this problem?

Developer

I write code

I write new features

I fix old code & Bugs

I wait weeks to deploy my code

Time to market for my products is suffering

My customers are **not** happy!

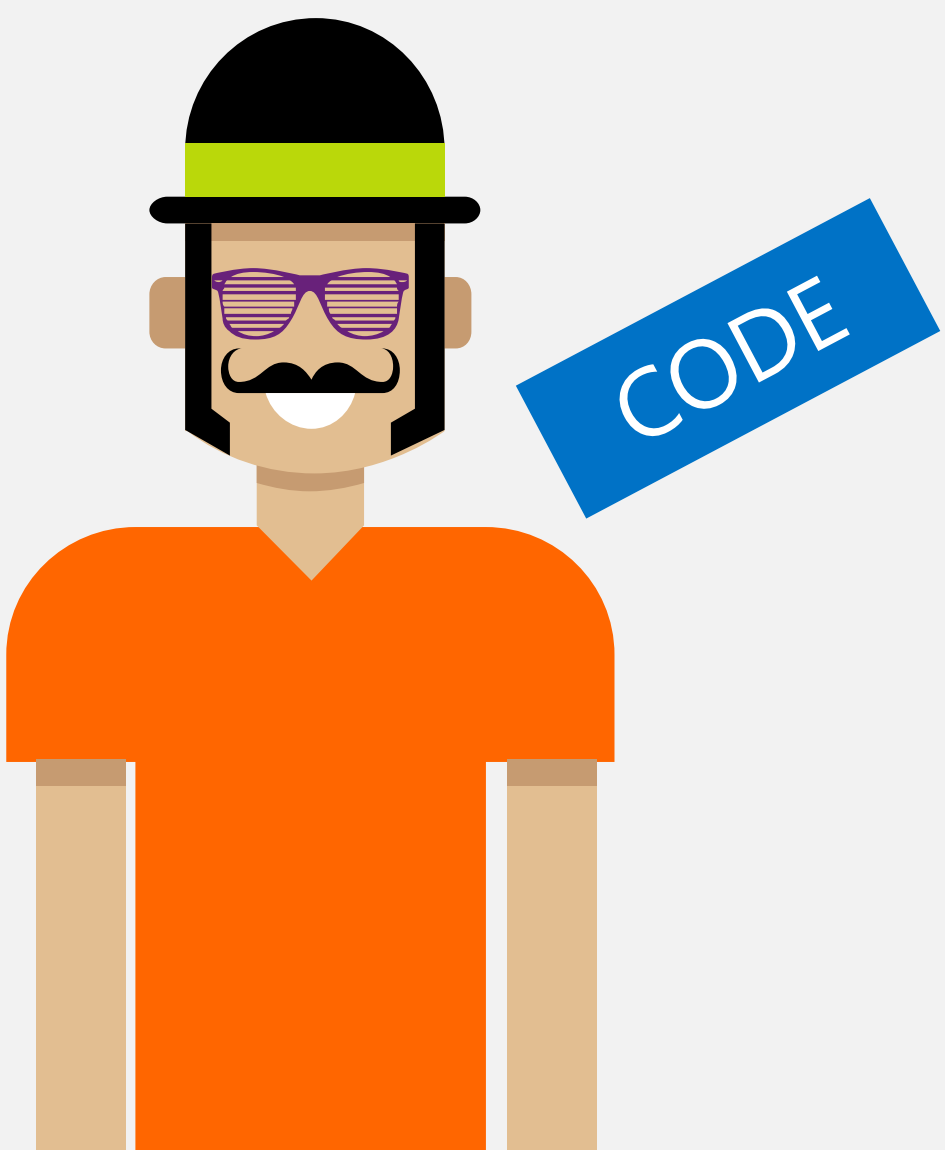
Operations are too slow!

Operations

I manage Dev and Prod code
Our environments != the same
I am responsible for 99.9% uptime
I manage hundreds of servers
Our company is growing fast and so is my responsibilty
I own the bugs from deployments
Developers don't care about uptime!

Developer

Operations



DevOps

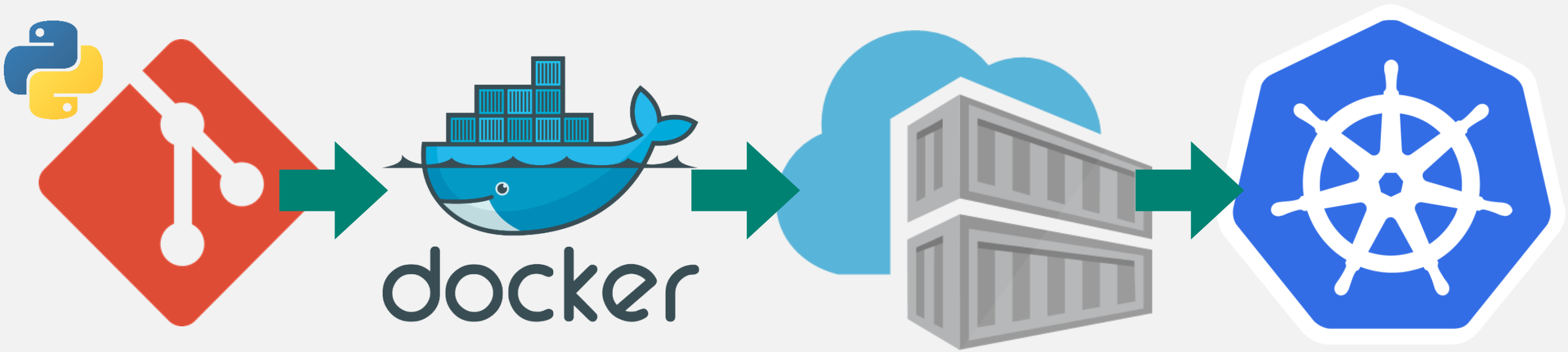
1. Culture
2. Source Control
3. Continuous integration/testing
4. Continuous deployment
5. Infrastructure as code
6. Configuration as code
7. Automation
8. Operational Monitoring / Feedback

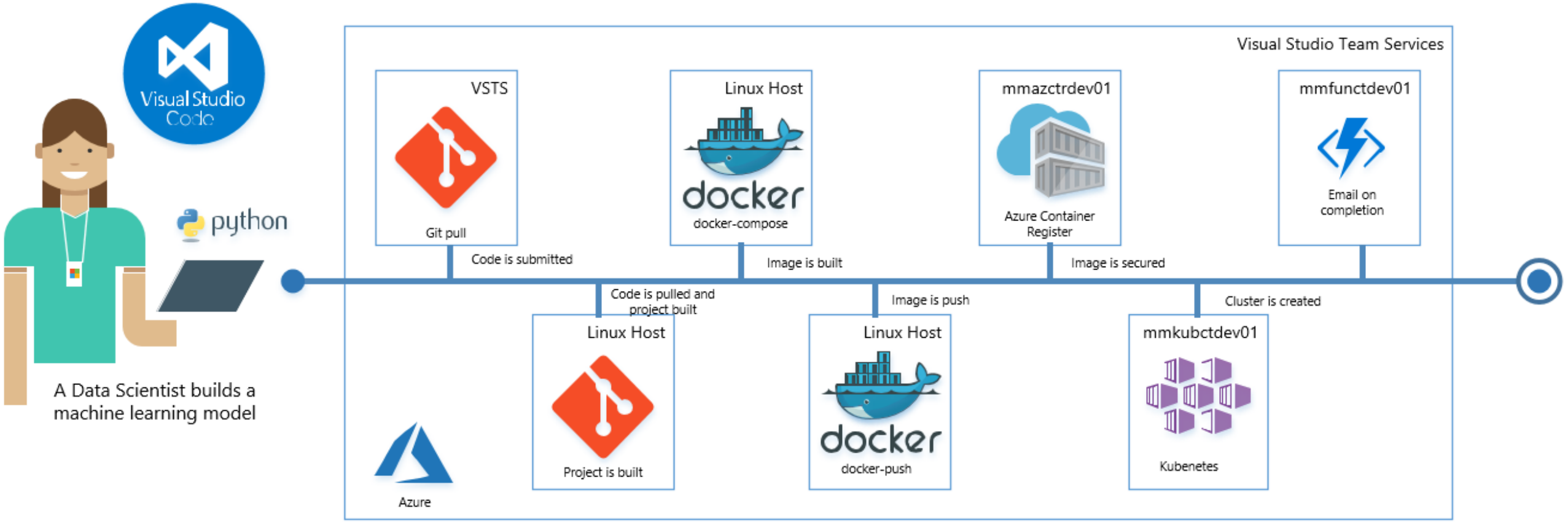
DevOps

Lets automate the deployment of data science with DevOps

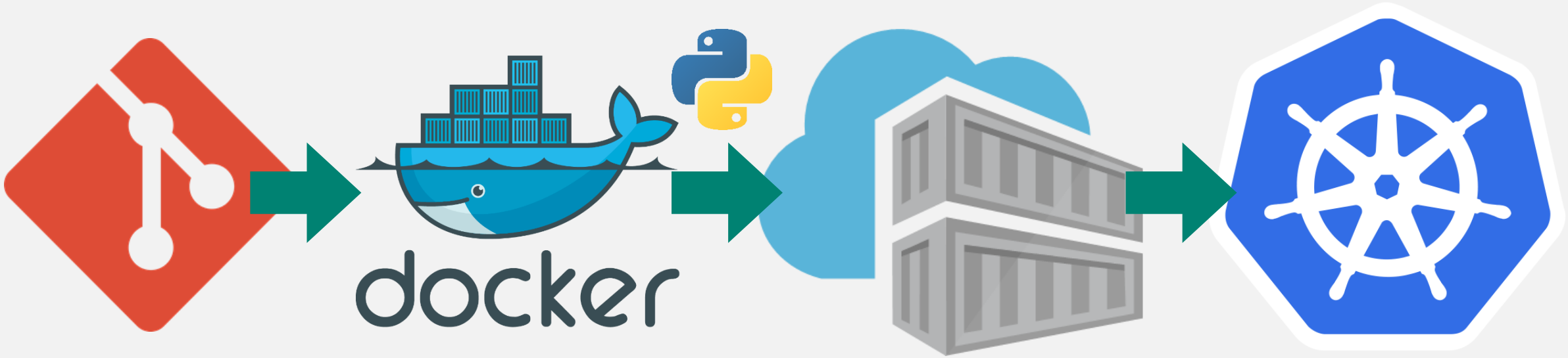
https://modelmanagement.visualstudio.com/DundeeDataScience/

Demo




Visual Studio Code
python
A Data Scientist builds a machine learning model
Visual Studio Team Services
VSTS
Git pull
Code is submitted
Linux Host
docker
docker-compose
Image is built
mmazctrdev01
Azure Container Register
Image is secured
mmfunctdev01
Email on completion
Code is pulled and project built
Linux Host
Project is built
Image is push
Linux Host
docker
docker-push
Cluster is created
mmkubctdev01
Kubenetes
Azure

Want to see more?



MICROSOFT MVP, MASTER OF DATA SCIENCE & PRINCIPAL CONSULTANT AT ADATIS

ABOUT

APPLYING DEVOPS TO DATA SCIENCE

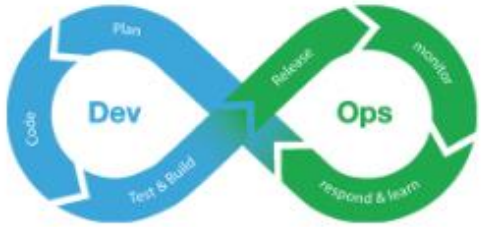
PRESENTATION TIPS

PRESENTATIONS

DATA PLATFORM MVP

Microsoft® MVP Most Valuable

APPLYING DEVOPS TO DATA SCIENCE



Hi everyone.

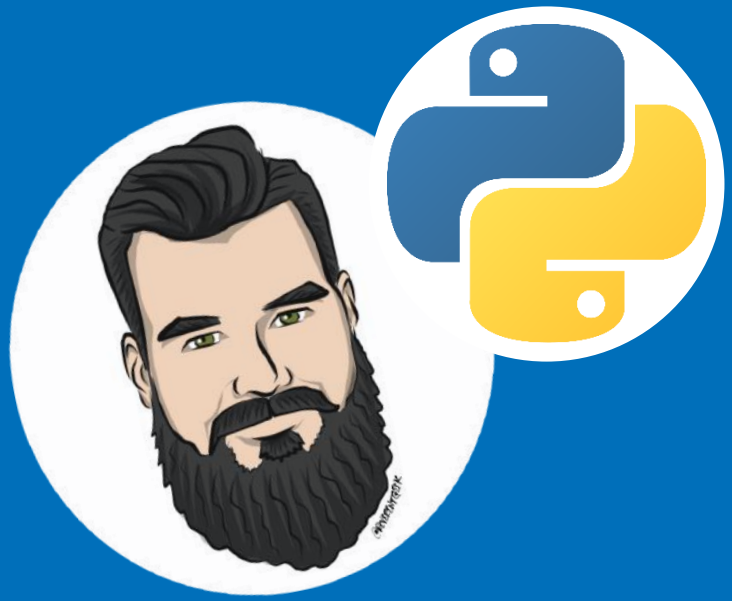
Some of you might know that for the last 2 years I was studying a Master's degree in data science from the University of Dundee. This was a 2 years part-time course delivered by Andy Cobley and Mark Whitehorn. This course was fantastic and I recommend it – If you want to know more about the course, please give me a shout. The course is comprised of multiple modules. The final module is a research project, which you need to start thinking about towards the end of the first year of study. I selected my topic very early on, however being indecisive, I changed my idea 3 times (each time having written a good chunk of the project).

Why did I do this? I simply was not passionate about the subject of those projects. They we good ideas, but I just was not researching or building anything new. The outcome of my dissertation might have been a working project, however it would have felt hollow to me. I need to [illegible] is because of that, that I have spent much of career working either with or developing automation tools to accelerate and simplify my development processes. Having attended a lot of conferences, I became familiar with DevOps and how it accelerated the software industry. DevOps allows software developer to ship code faster. I have been applying the core principles of DevOps to all my recent projects, with great success.

The course covered a lot of the techniques required for data science, however it did not cover how to deploy a model in to production. I started researching deployment techniques. I read a lot of books which described the development process, each stopping at

http://www.hyperbi.co.uk/applying-devops-to-data-science/

DevOps will make your life easier!



Start learning how to get your models in to production. Automate that which is difficult.

Reduce your time to production, control and test your code. Monitor and manage your models in production.

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