



MLOps Workshop: From Experimentation to Production

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Agenda

- Introduction to MLOps (10min)
- Demo: Model CI/CD with ZenML (10min)
- Introduction to ML Pipelines (10min)
- Tutorial: Building ML Pipelines with ZenML (60min)

Introduction



Felix Altenberger

ML Engineer at ZenML

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💡 ZenML Core Developer

🚀 Previously ML Engineer at Presize
(acquired by Meta)

❤️ Coding, sports, travelling, languages

ML in the industry is more than training models



Chip Huyen @chipro · Oct 12, 2020

Machine learning engineering is 10% machine learning and 90% engineering.

86 591 7,516

Elon Musk ✅ @elonmusk

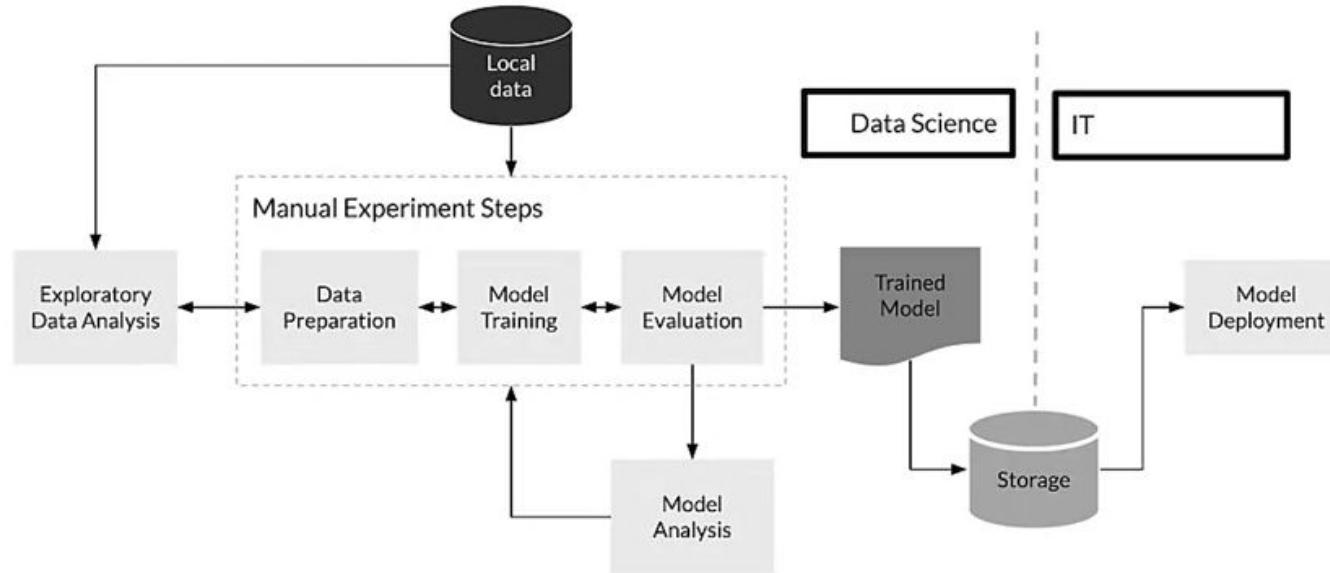
Replying to @chipro

Yeah

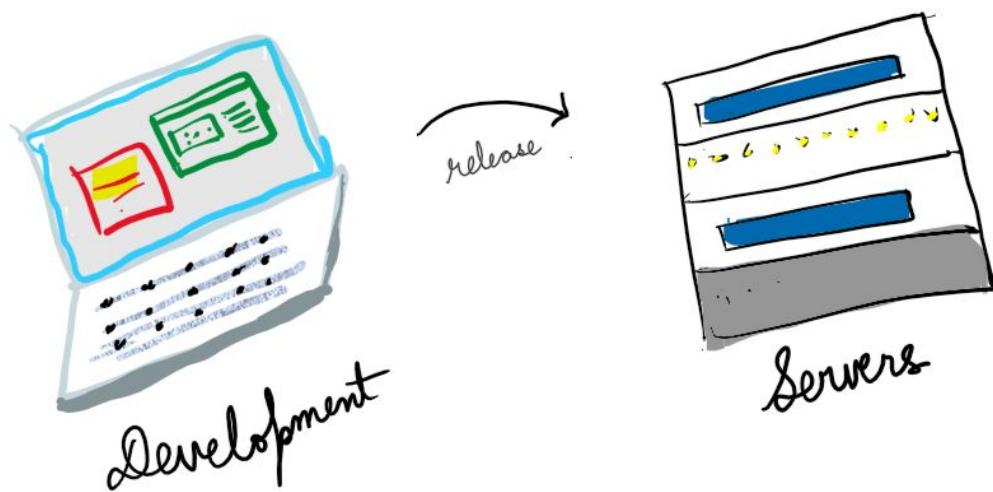
8:09 AM · Oct 13, 2020 · Twitter for iPhone

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How not to do it: Disconnect between ML & Ops



DevOps to the Rescue



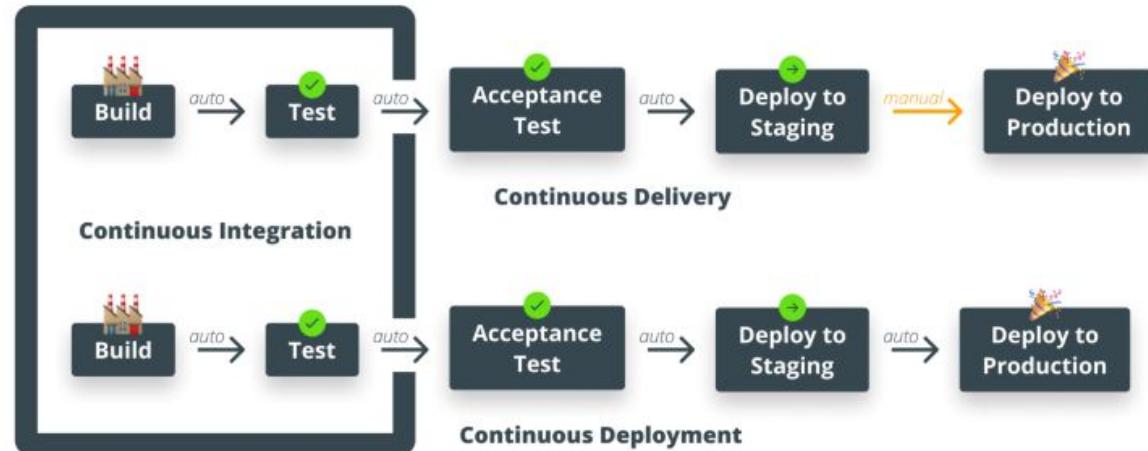
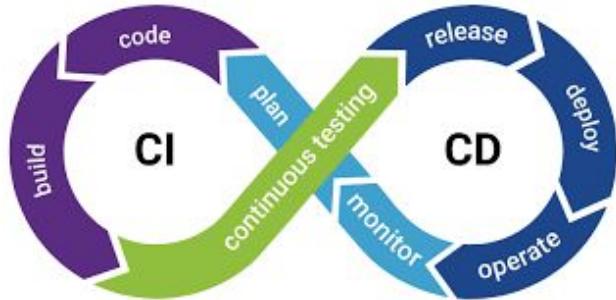
Development

- Write code and the logic that drives your software
- Test your code

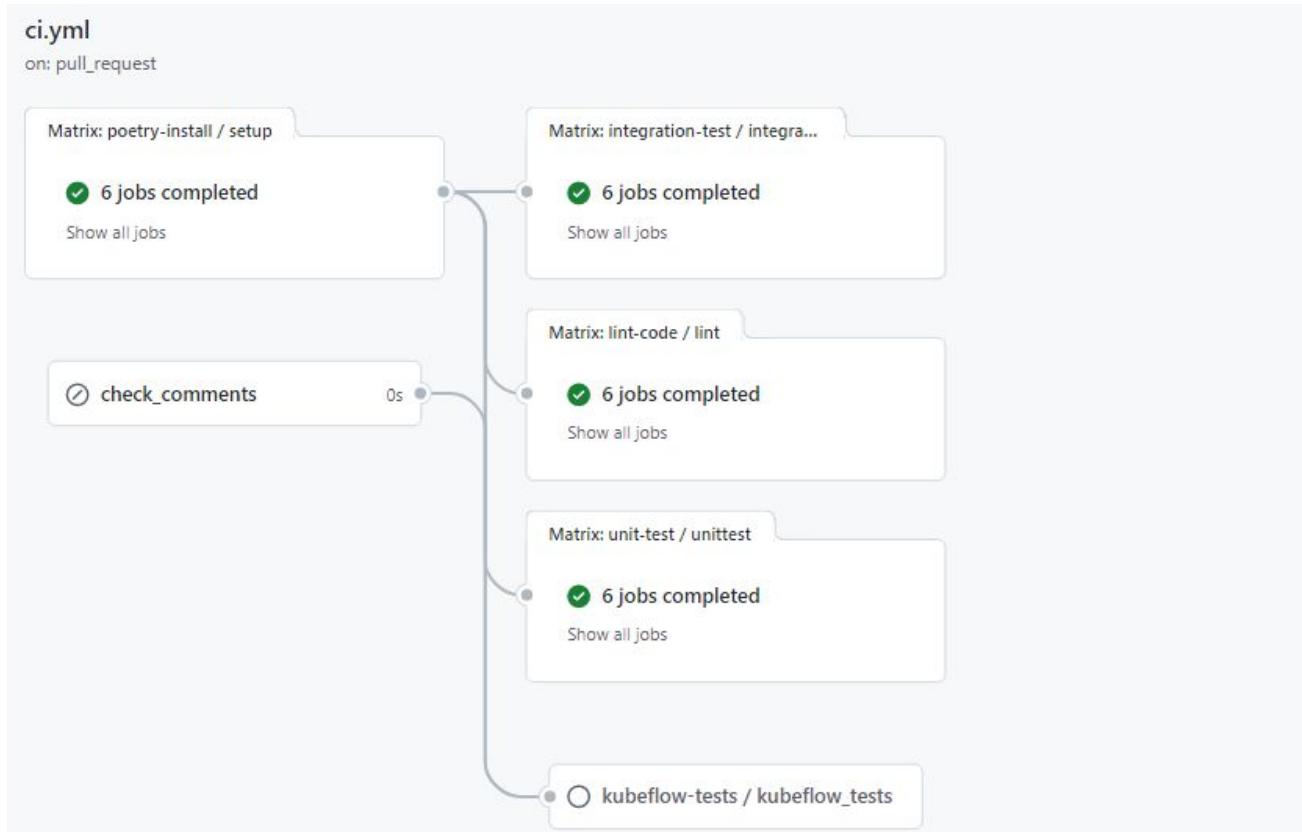
Operations

- Maintaining your code
- Handling failures
- Monitoring and logging

DevOps: Continuous Integration and Deployment (CI/CD)



Example DevOps Pipeline: GitHub Actions

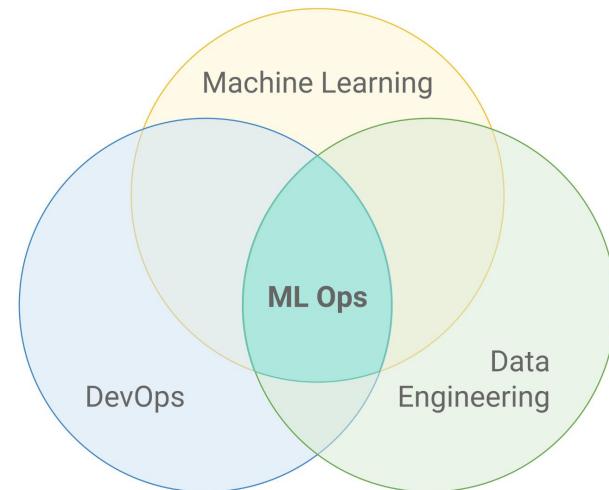


What is MLOps?

MLOps = DevOps for Machine Learning

Goals:

- Faster experimentation
- Faster deployment
- Monitoring and quality assurance

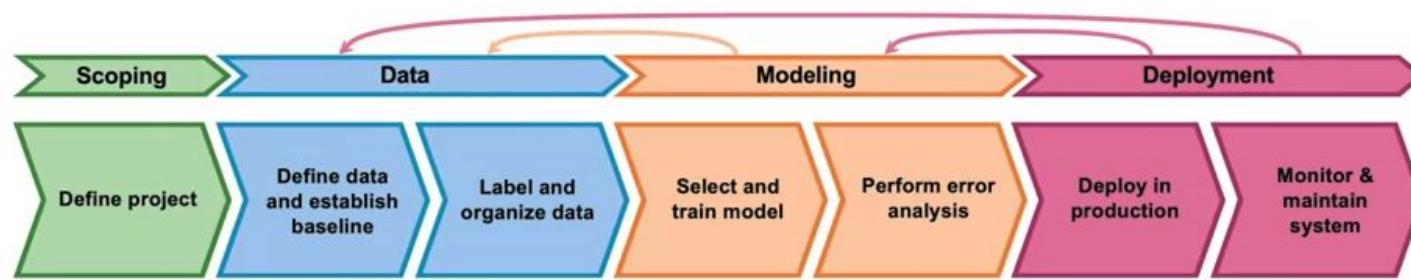


Demo

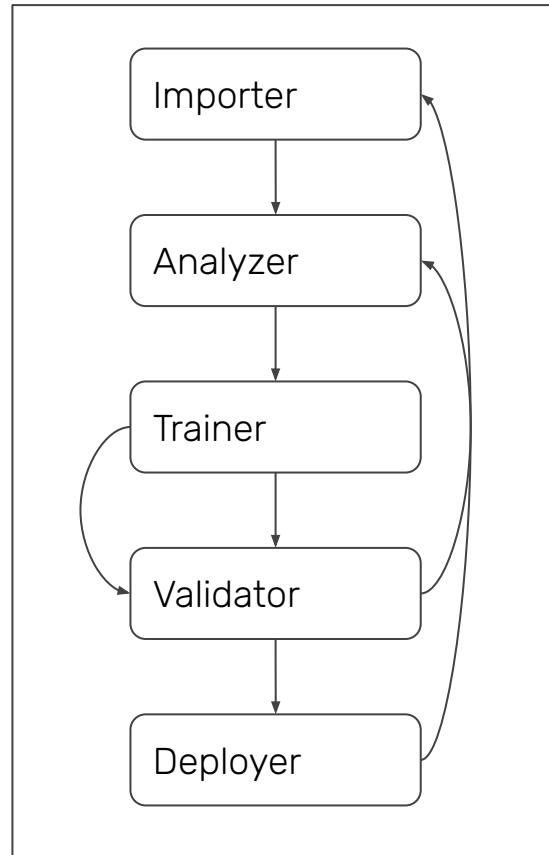
ML Pipeline CI/CD with ZenML

<https://github.com/zenml-io/zenml-gitflow>

The ML Lifecycle



Developing ML Pipelines



- Separate environment from code
- Version Data and Artifacts
- Maintain modularity and extensibility
- Track metrics and parameters
- Data Quality Checks
- Detect drift
- CI/CD/CT for continuous improvement
- Reproducibility, provenance and lineage



ZenML: Author portable ML pipelines



Tutorial

Let's create some pipelines

<https://github.com/zenml-io/zenbytes>

Takeaways

- ML in production is more than model training
- Handover points are really bad
- MLOps brings best practices from DevOps to ML
- To make full use of MLOps, you should write your ML code as pipelines
- With ZenML you can write tooling-agnostic ML pipelines

Thank you and please show your love!



Give us a  on GitHub: <https://github.com/zenml-io/zenml>



Join our Slack and get in touch: <https://zenml.io/slack-invite>

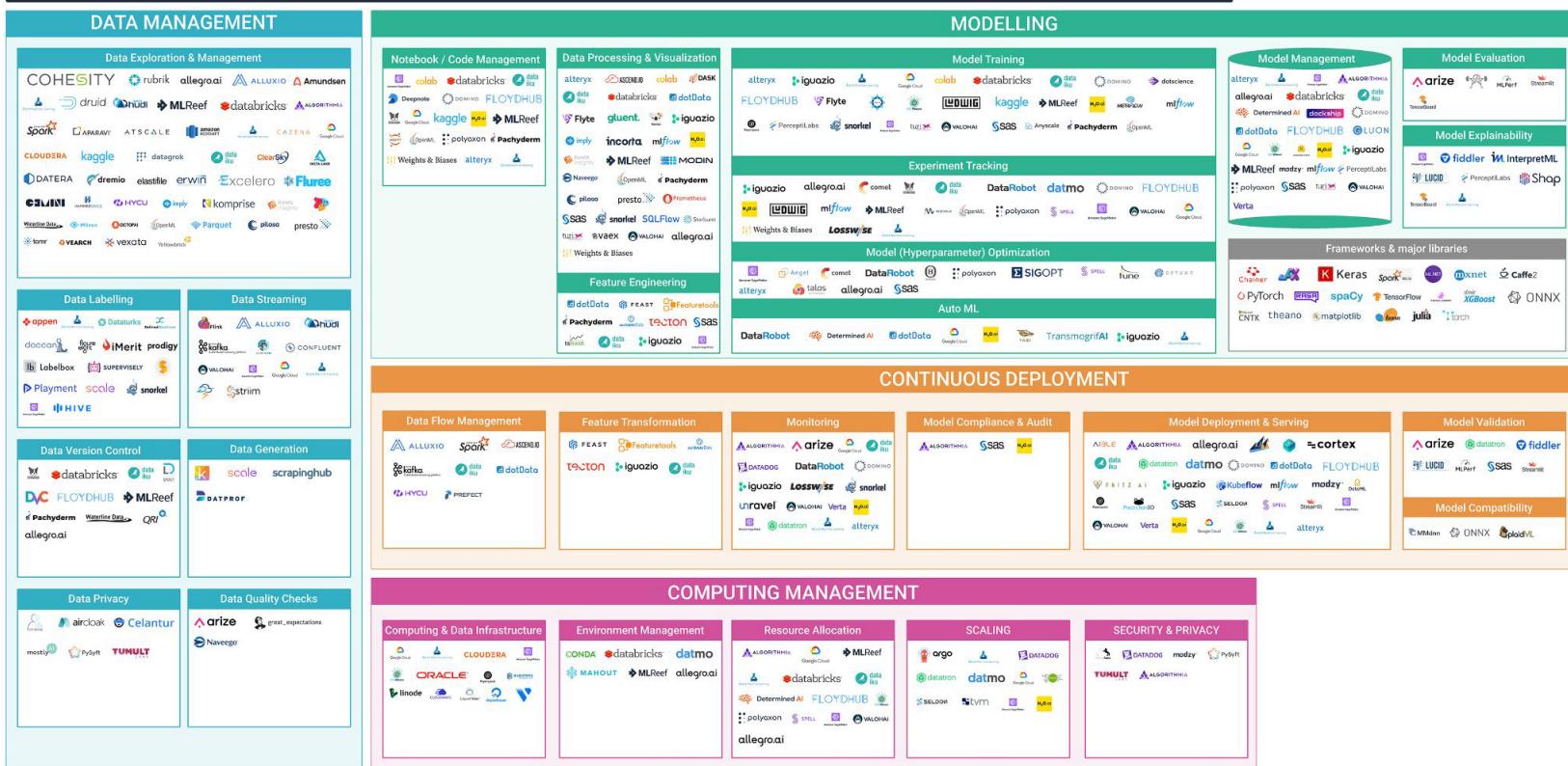


Email: felix@zenml.io

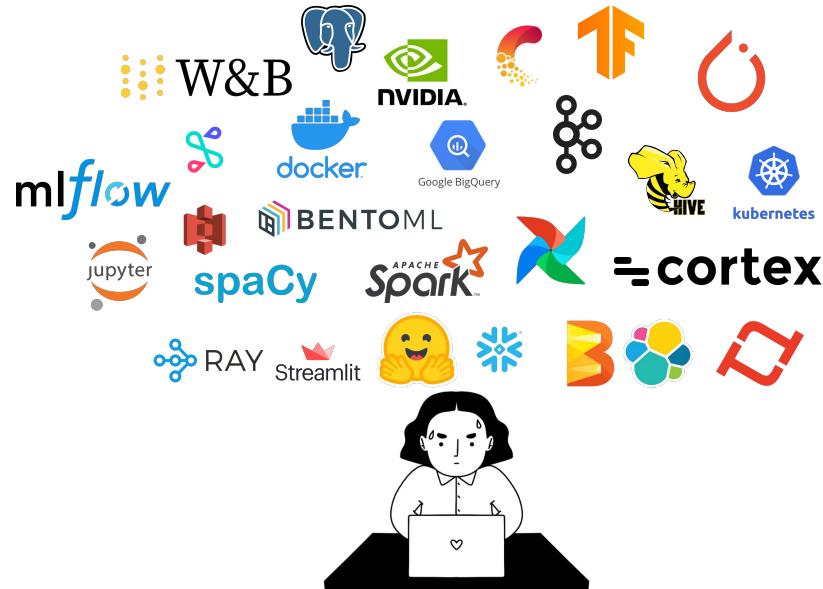
MLOps Tooling Landscape

Machine Learning tools & platforms landscape - v.1.0 January 2021

Presented by  **MLReef**

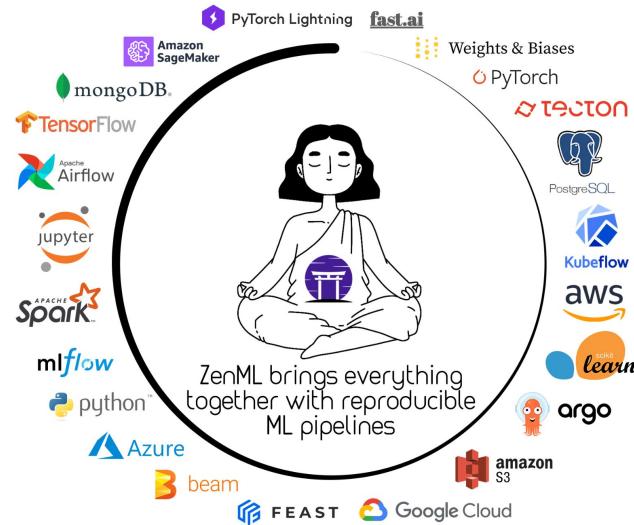


Are you overwhelmed with this?



There's a lot to handle in
production machine learning

ZenML is here to help



ZenML is an extensible open-source framework that allows separation between your code and your stack



ZenML Pipelines Connect and Travel across Stacks