# What is MLOps?

**MLOPS CONCEPTS** 



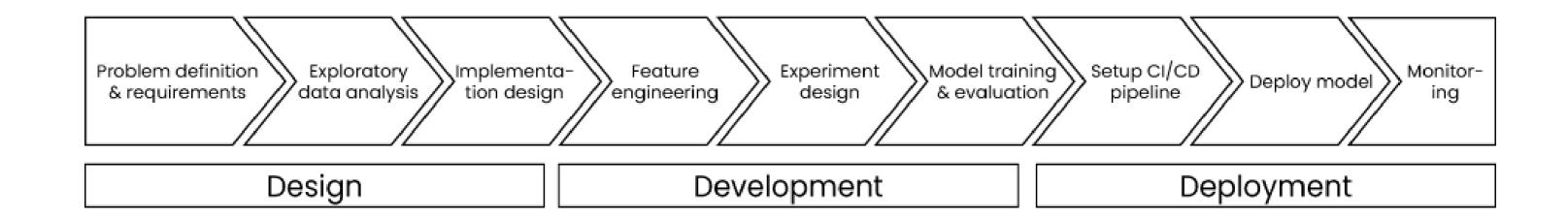
Folkert Stijnman ML Engineer



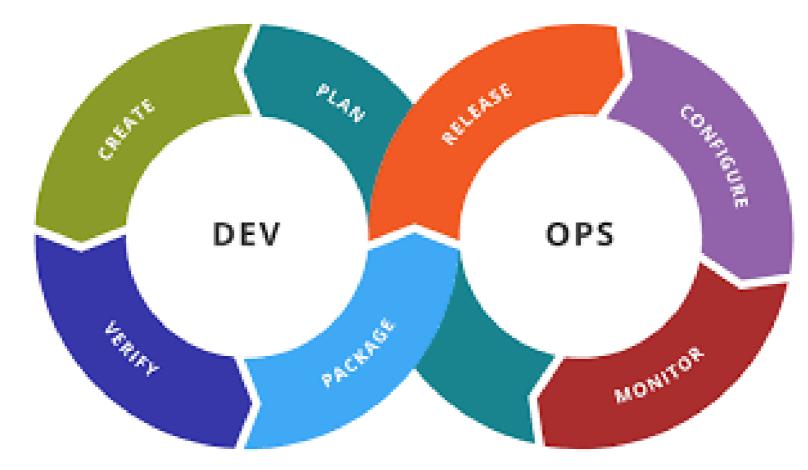
### Machine Learning Operations

...is the set of practices to design, deploy and maintain machine learning in production continuously, reliably, and efficiently.

- Focus on machine learning 'in production'
- The full machine learning lifecycle

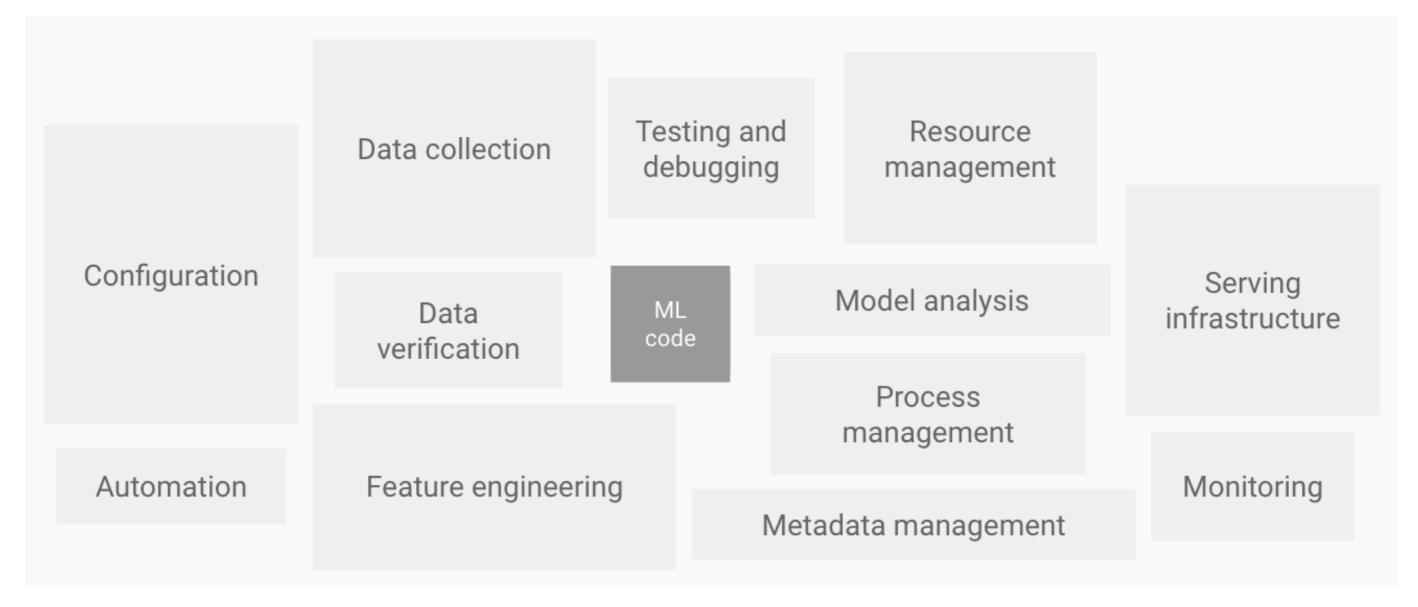


### The origin of MLOps



- Practices and tools to deliver software applications
- Development and Operations used to be separate

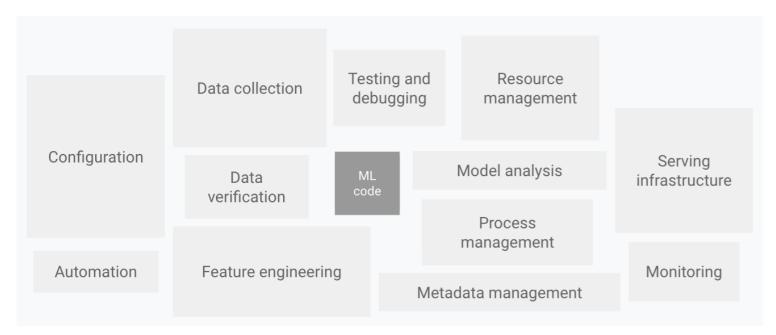
### Why MLOps



<sup>&</sup>lt;sup>1</sup> https://cloud.google.com/architecture/mlops-continuous-delivery-and-automation-pipelines-in-machine-learning



### Why MLOps



- Improved collaboration
- Automation of deployment
- Monitoring of model performance

# Let's practice!

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# Different phases in MLOps

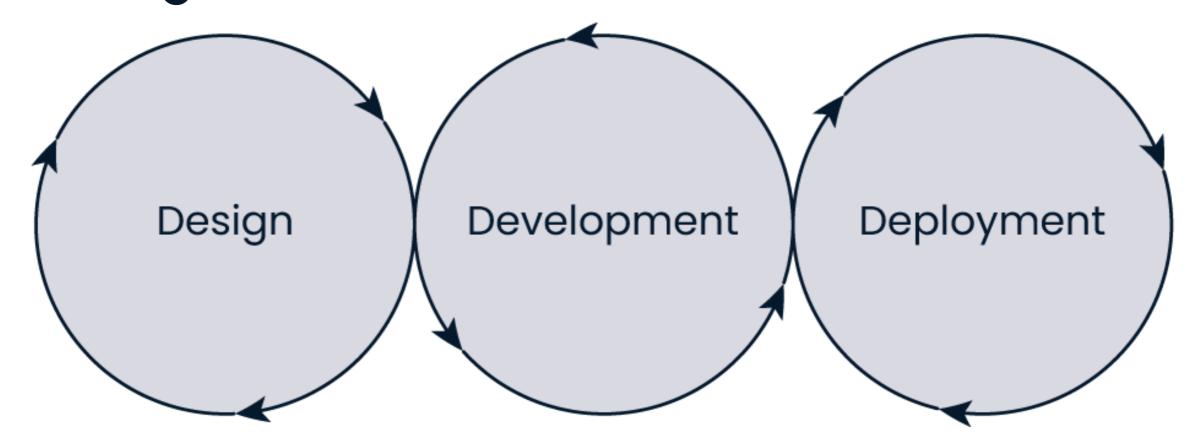
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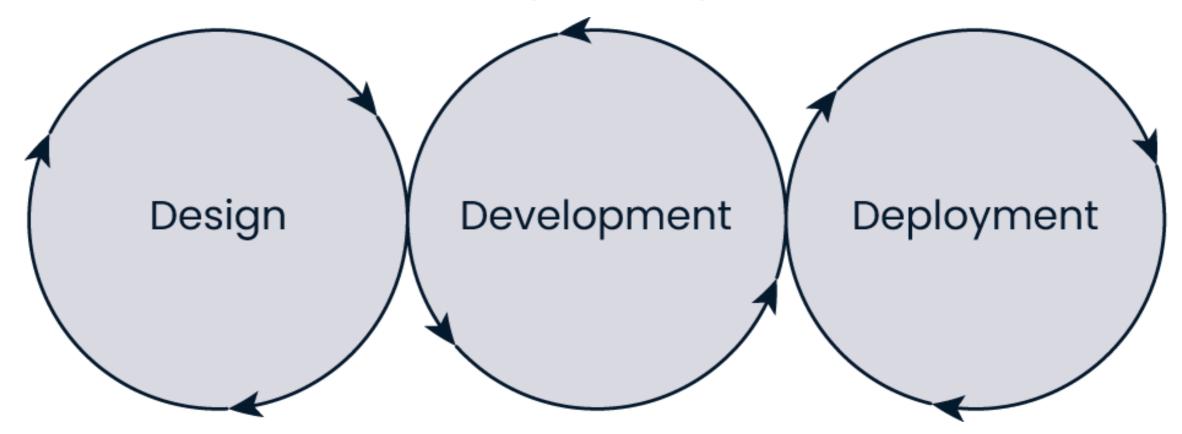
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### MLOps lifecycle

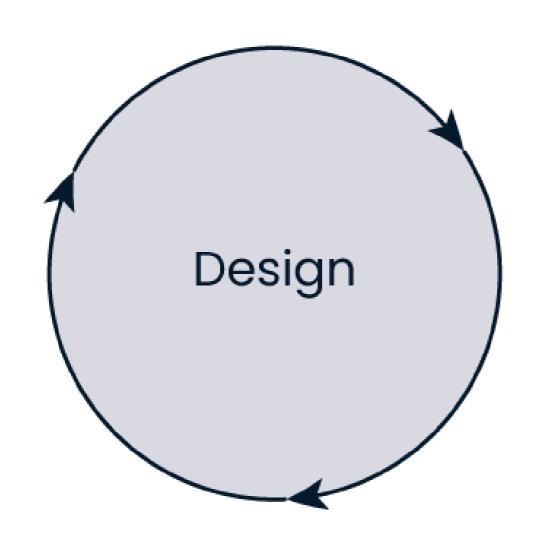


### Why the machine learning lifecycle?



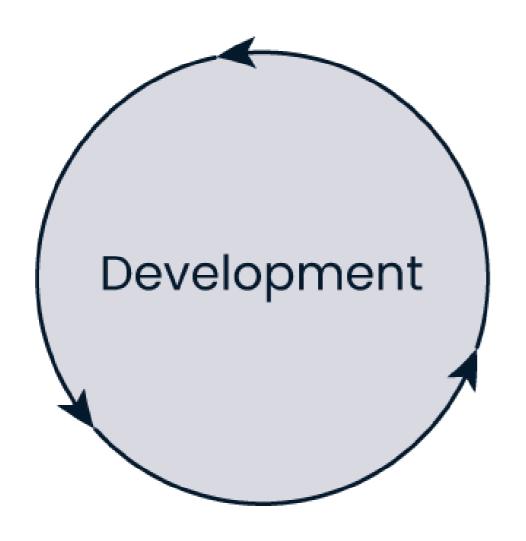
- Structures the ML process
- Defines key players at each stage
- Toolkit for optimization

### Design phase



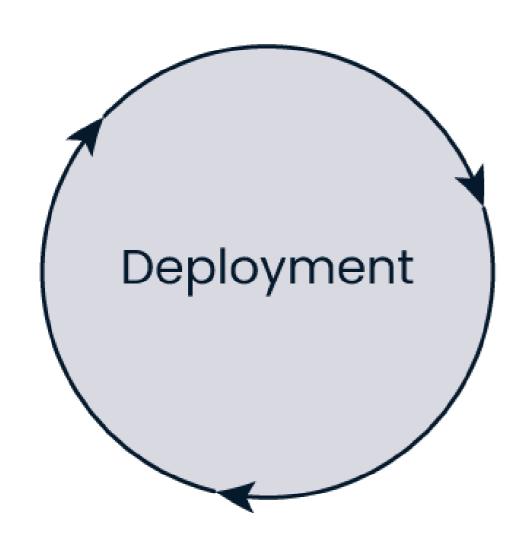
- Context of the problem
- Added value
- Business requirements
- Key metrics
- Data processing

### Development phase



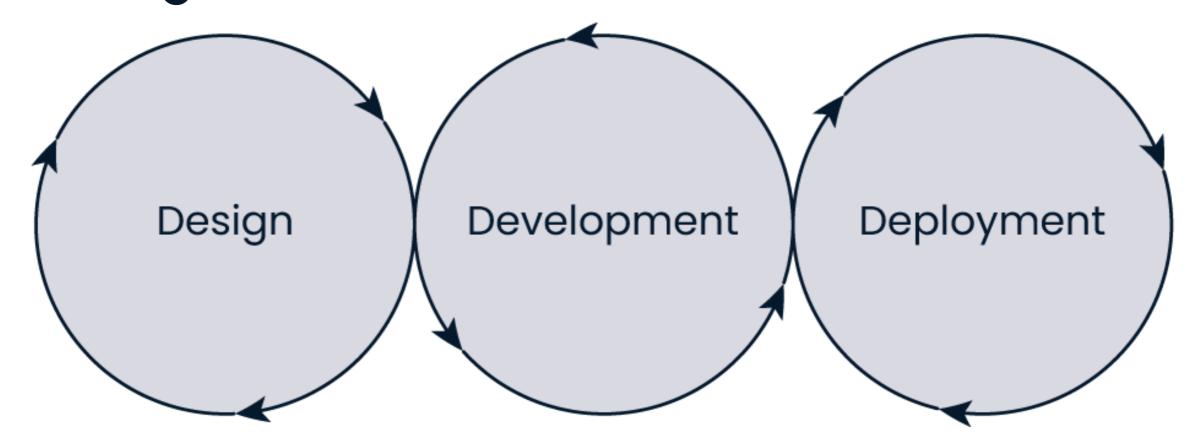
- Develop machine learning model
- Experiment with data, algorithms, and hyperparameters
- Model ready for deployment

### Deployment phase



- Integrate the machine learning model in business
- Deploying the model in production
- Monitoring the performance

### MLOps lifecycle



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## Roles in MLOps

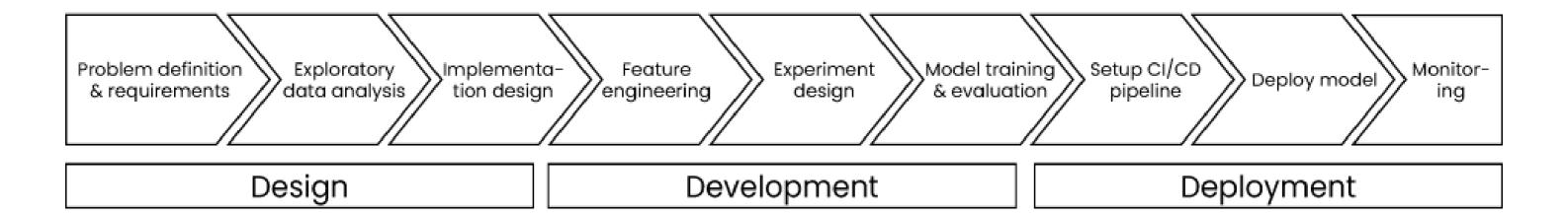
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### Machine learning lifecycle



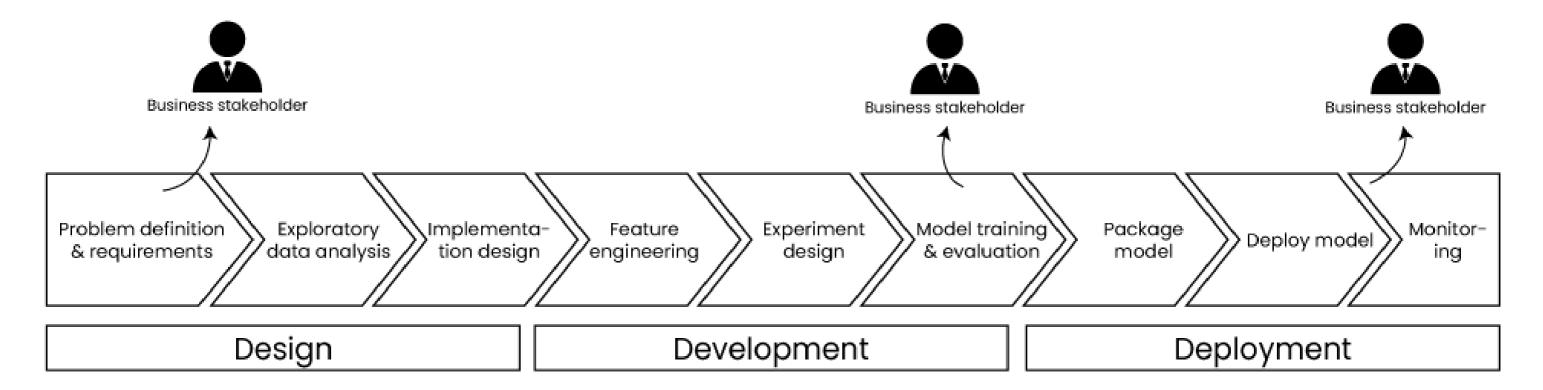
- Business roles
- Technical roles

#### **Business roles**

- Business stakeholder
- Subject matter expert

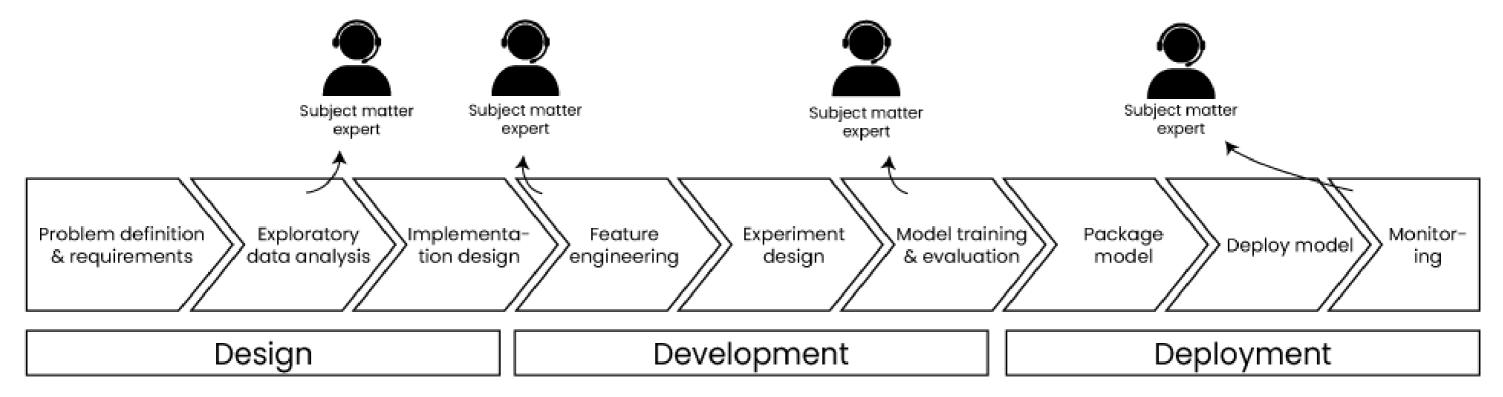


#### Business roles: business stakeholder



- Budget decisions
- Vision of company
- Involved throughout the lifecycle

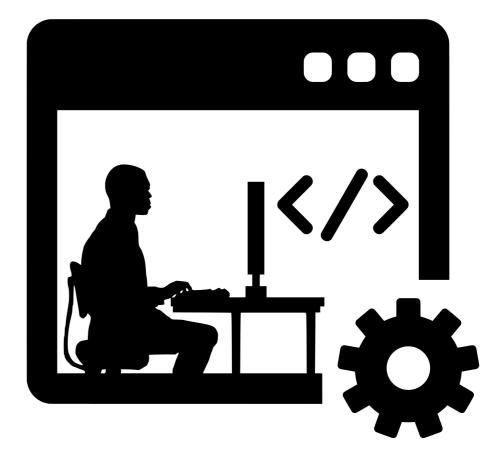
### Business roles: subject matter expert



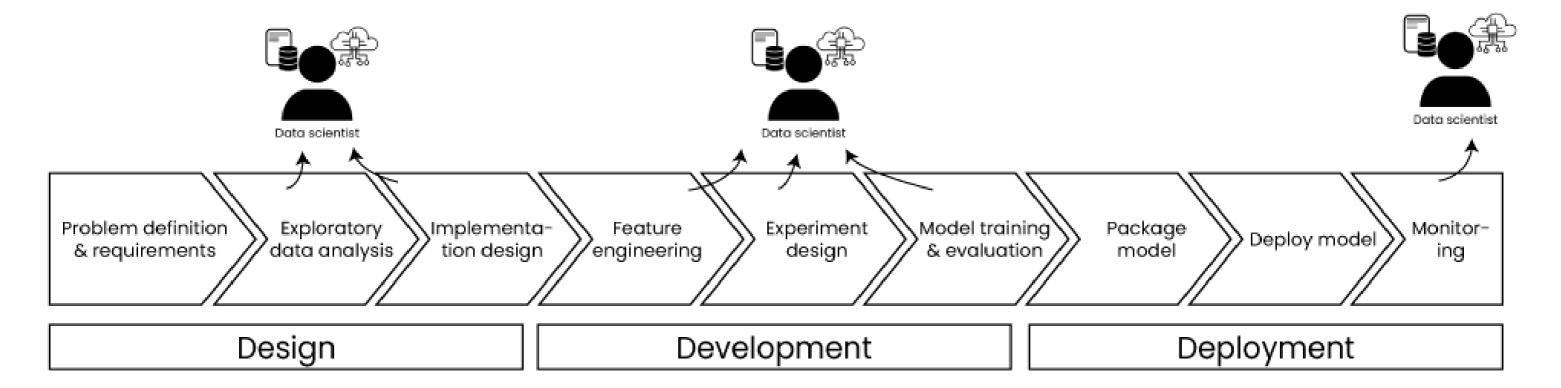
- Domain knowledge
- Involved throughout the lifecycle
- Interpret and validate data

#### **Technical roles**

- Data scientist
- Data engineer
- ML engineer

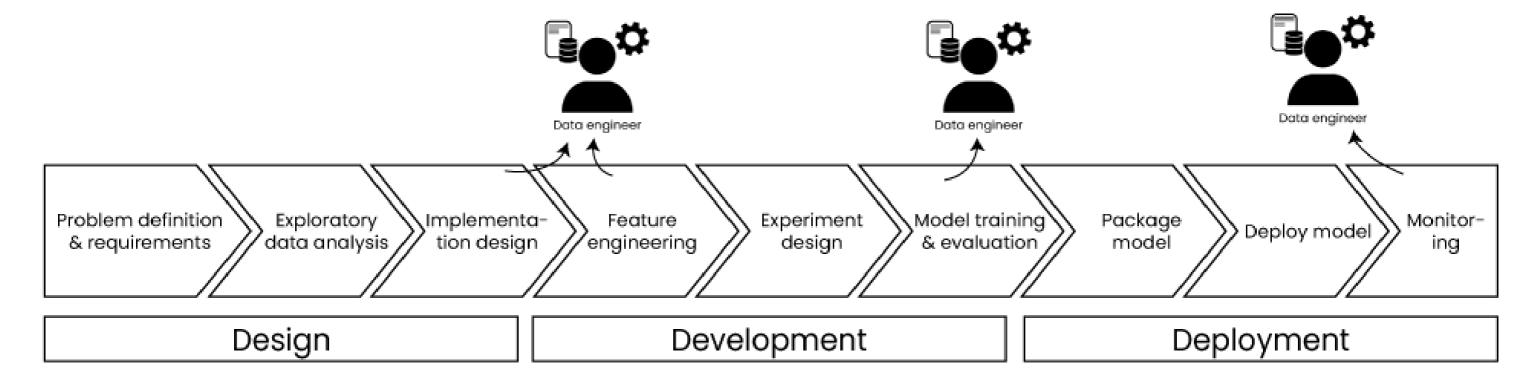


#### Technical roles: data scientist



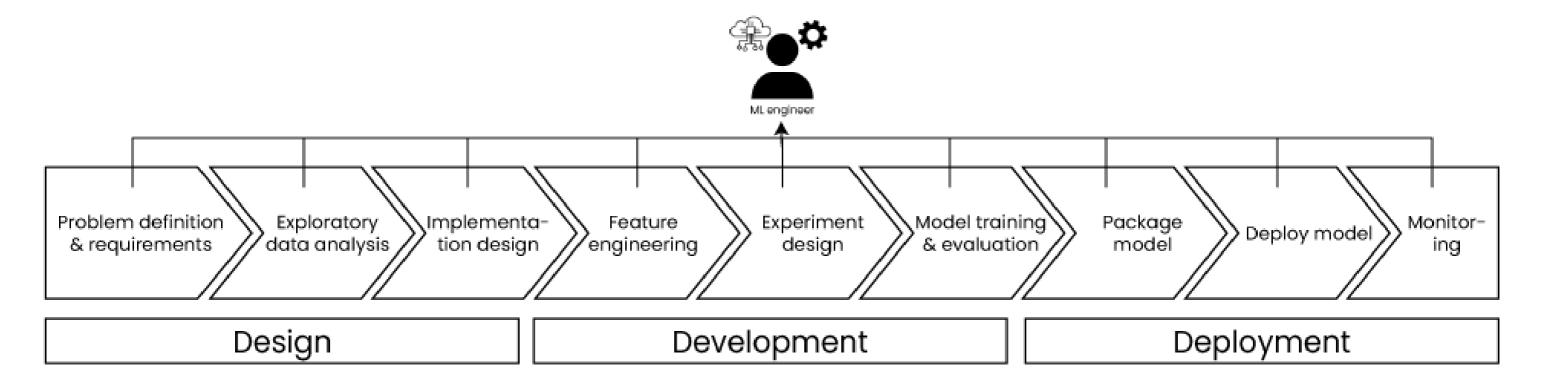
- Data analysis
- Model training and evaluation

### Technical roles: data engineer



- Collecting, storing, and processing data
- Check and maintain data quality

### Technical roles: ML engineer



- Versatile role
- Specifically designed for complete machine learning lifecycle

#### Additional roles involved in ML

- Data analyst, developer, software engineer, backend engineer
- Responsibility of roles can vary depending on application of machine learning
- Startup is different from a large enterprise



# Let's practice!

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