

Building Operationalization Capabilities with DataCamp's MLOps Curriculum

May 31, 2023



Our mission is to democratize data & AI skills for everyone

Companies and teams of every size use
DataCamp to close their skill gaps
and make better data-driven decisions.



Future-proof your business with data skills

Best in class learning



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A better webinar experience for you



Ask questions

Open Q&A at the end!



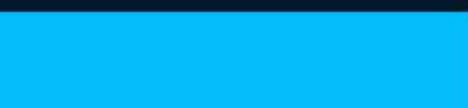
Handouts

We have tons of goodies in the chat section — make sure to check them out!



Share it!

A recording of the webinar will be sent you — make sure to share it with your colleagues!



About us



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DataCamp

 [arnewarnke](https://www.linkedin.com/in/arnewarnke)



Agenda



- 1 Understanding MLOps and its significance
- 2 A deep dive into DataCamp's MLOps curriculum
- 3 Getting started with MLOps





1

Understanding MLOps and its significance



As the need for ROI from data science and machine learning explode — MLOps is becoming a must-have for every data team



The operationalization gap in machine learning

87%

Of data science projects don't make into production

[Venture Beat \(2019\)](#)

26%

Only 26% of organizations have AI models in production

[O'Reilly's AI Adoption in the Enterprise 2022](#)



The emerging value of MLOps

60%

More value from data & AI projects from companies implementing MLOps

[McKinsey \(2022\)](#)

2X

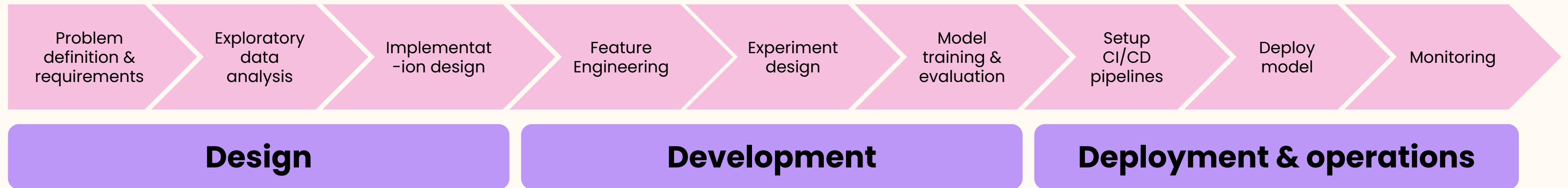
Organizations already implementing MLOps are twice as likely to be successful in deriving ROI from data initiatives

[Deloitte \(2023\)](#)



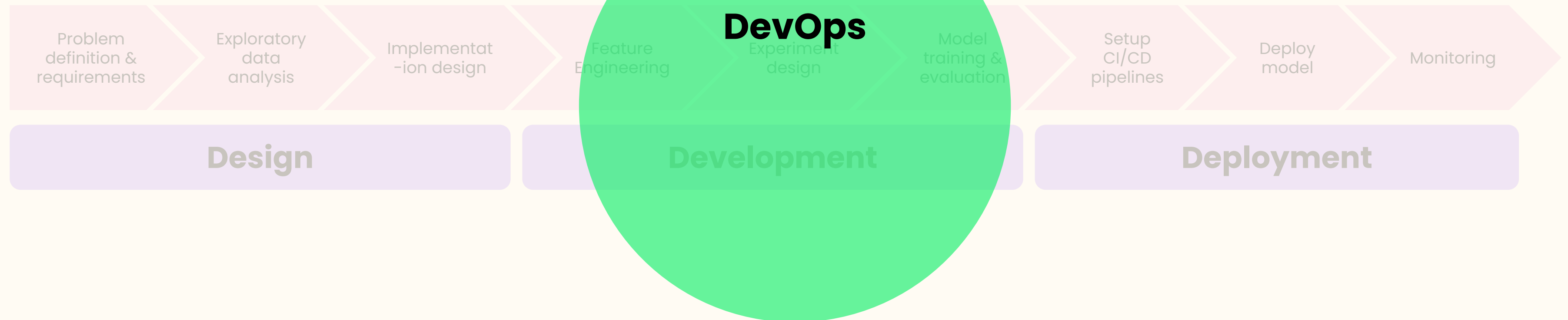
What is MLOps?

*Machine Learning Operations (MLOps) is a set of practices to **design, deploy** and **maintain machine learning in production continuously, reliably, and efficiently***



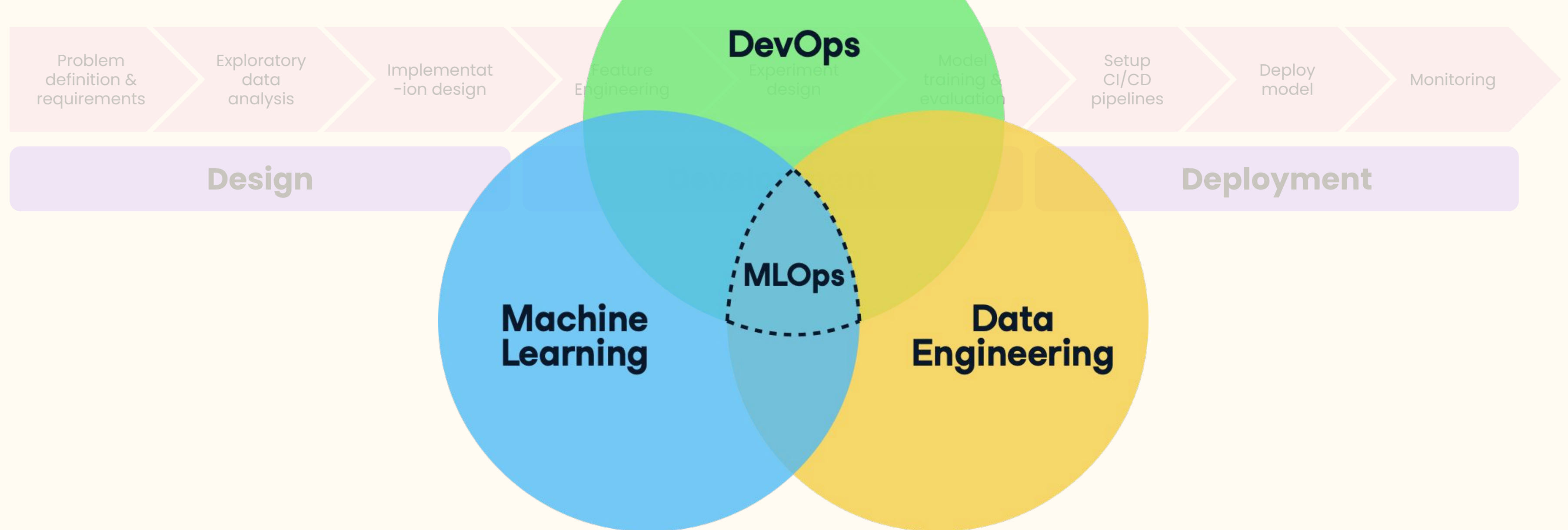
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MLOps as a competitive advantage

1 Standardized best practices for machine learning

MLOps provides a framework for data teams to designing, deploying and monitoring machine learning models at scale

2 Speed & reliability

Organizations already implementing MLOps are twice as likely to be successful in deriving ROI from data & ML initiatives (deloitte)

3 Security & ethics

MLOps embeds reliability, security, and regulatory compliance within the machine learning development process (McKinsey)

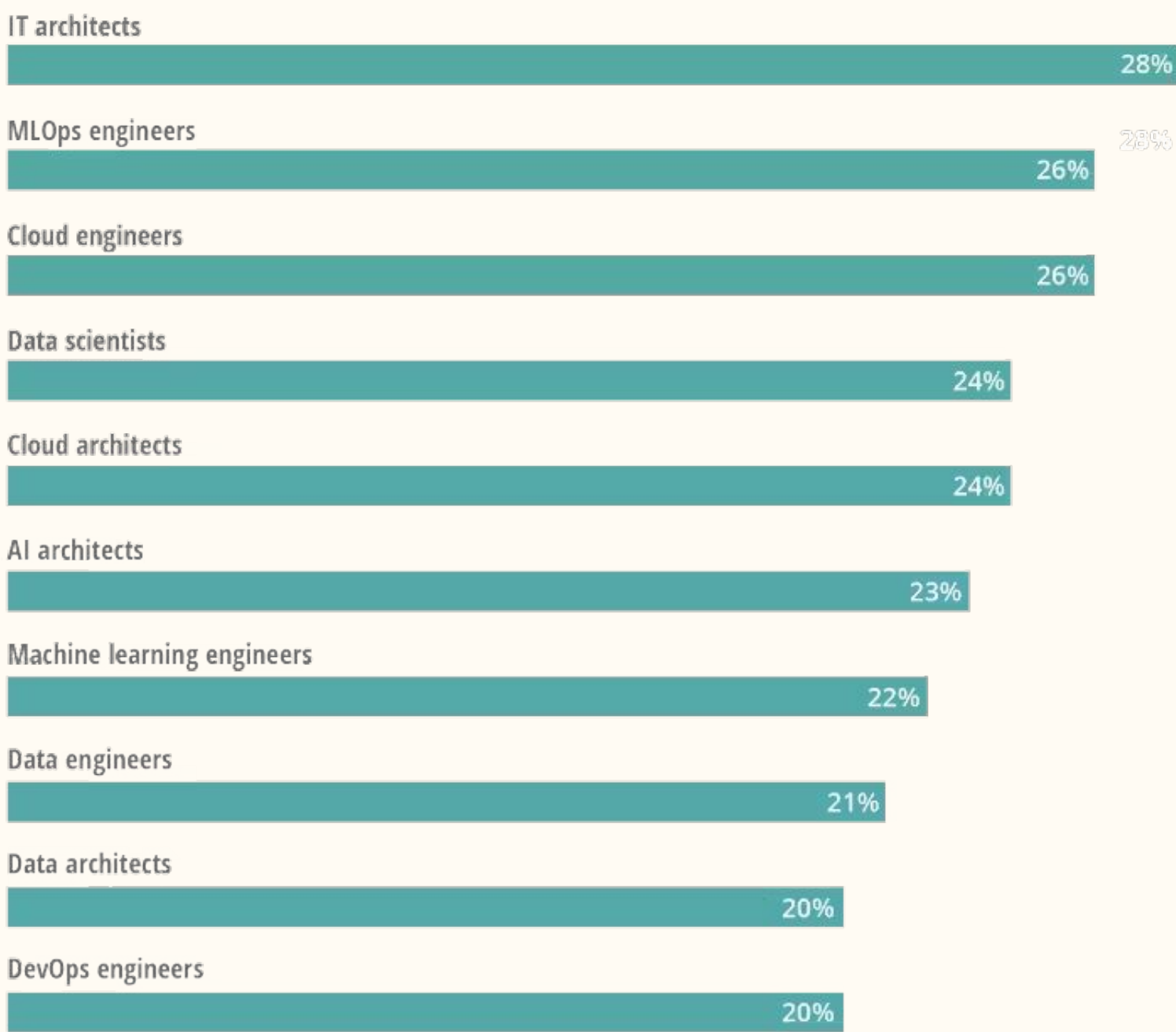
4 Improved collaboration

Improved alignment across different data roles and teams

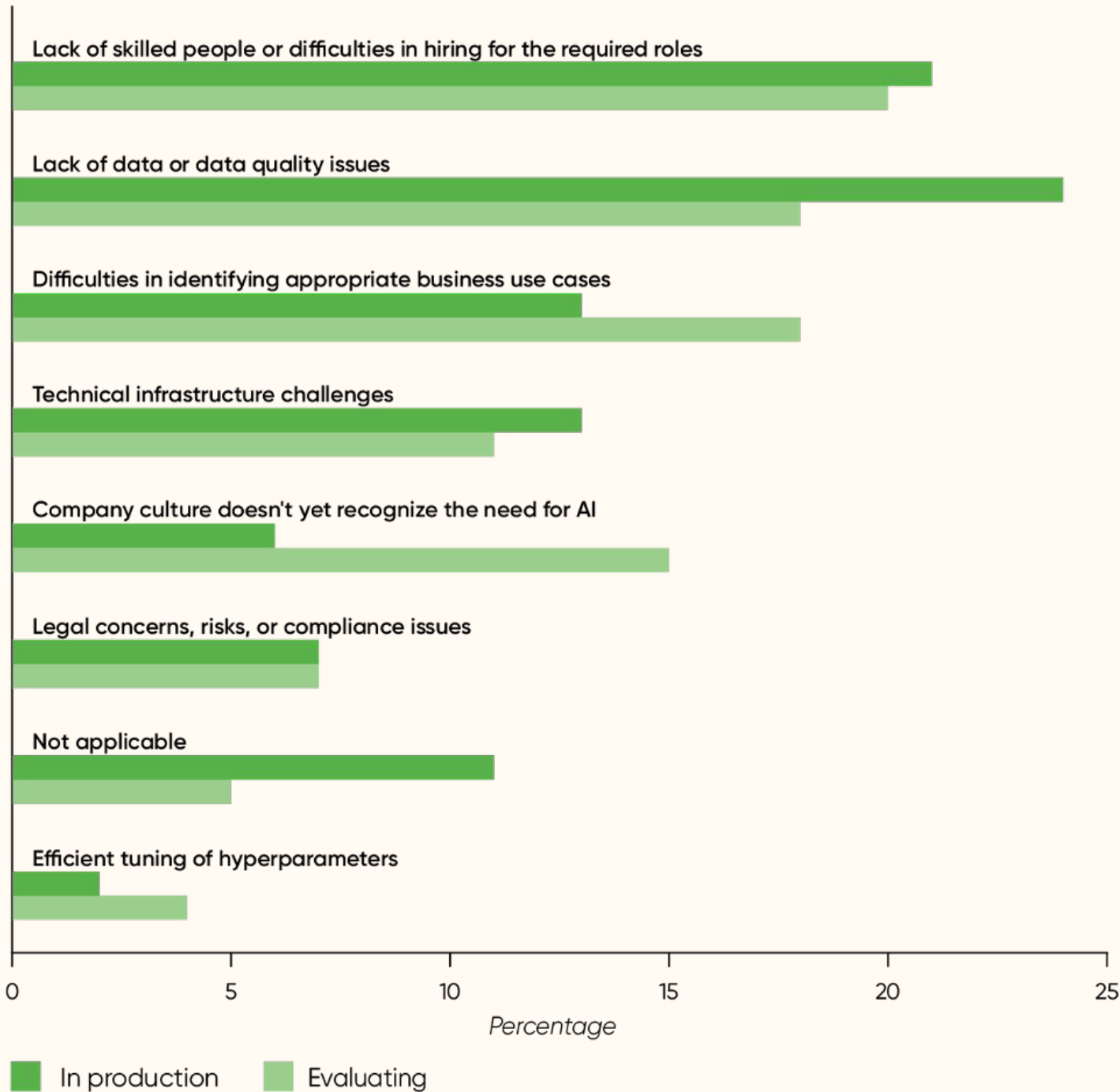


The MLOps skill gap — a key driver in low MLOps adoption

**Which skills are you most missing in your data teams?
(Deloitte 2023)**



**What are the biggest obstacles in productionizing AI?
(O'Reilly 2022)**





2

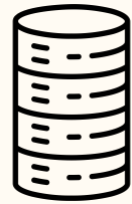
A deep dive into DataCamp's MLOps curriculum



DataCamp's MLOps curriculum – and beyond



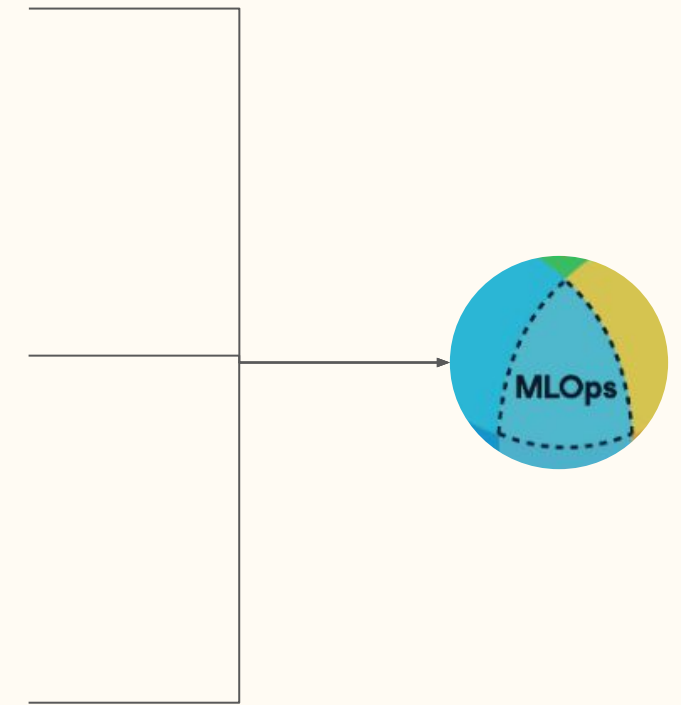
Software Engineering / DevOps



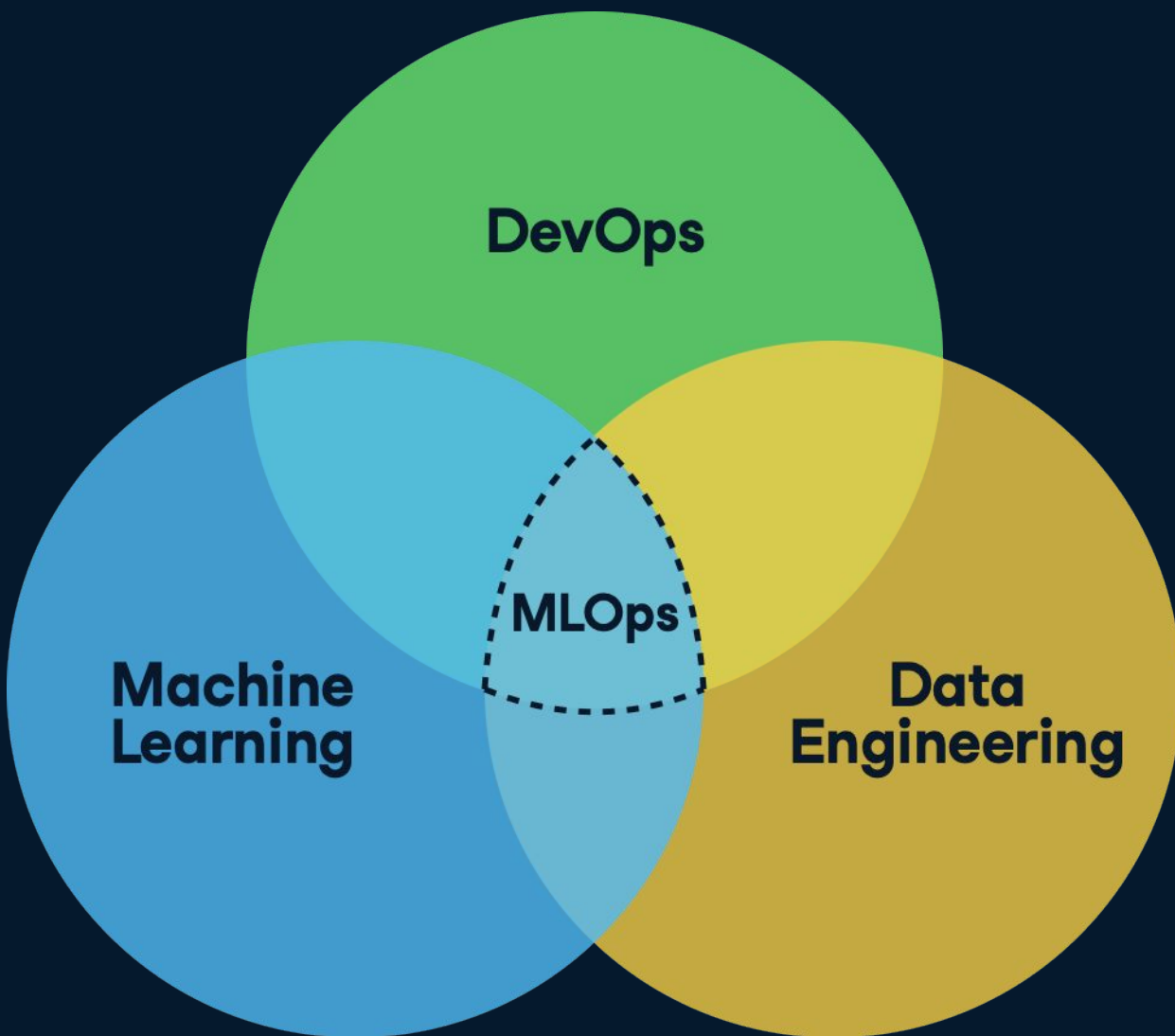
Data Engineering



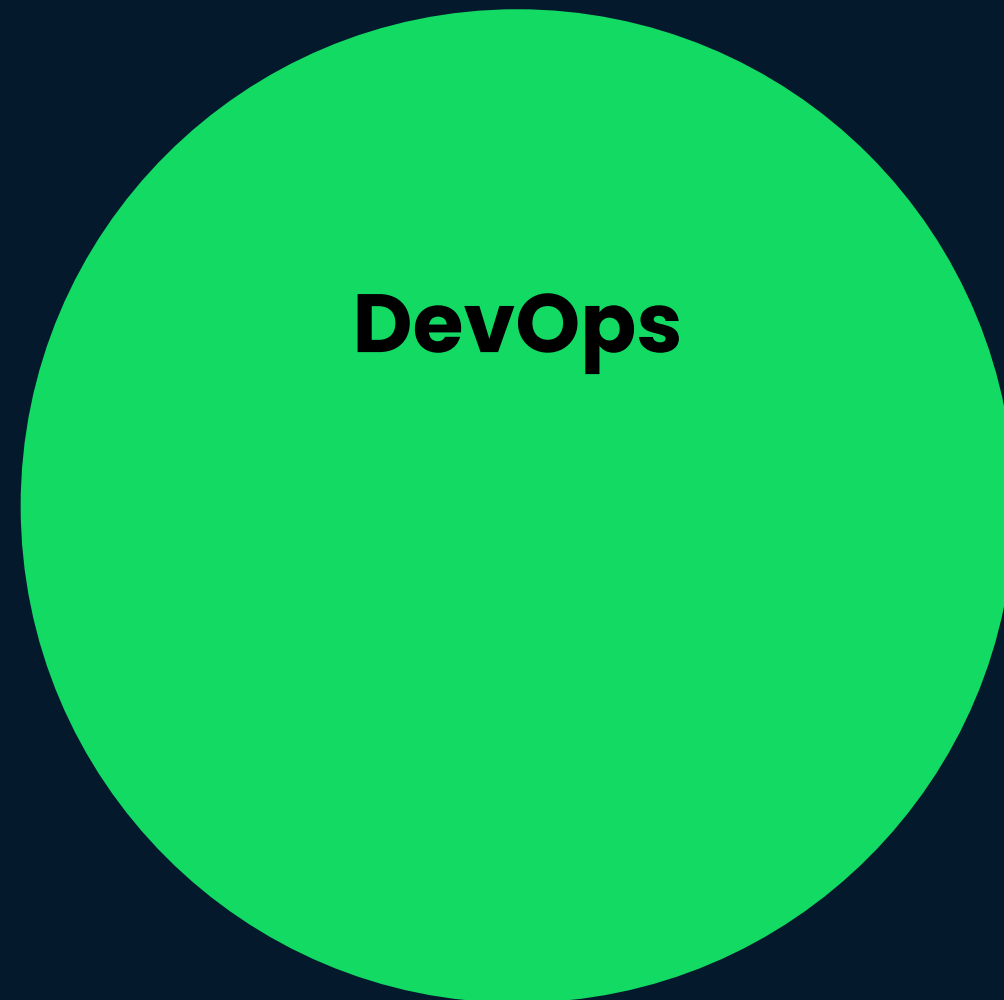
Machine Learning



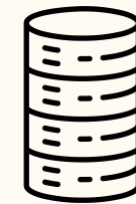
Infrastructure (e.g., cloud computing)



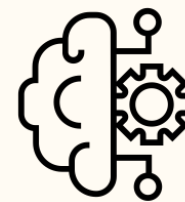
DataCamp's MLOps curriculum – and beyond



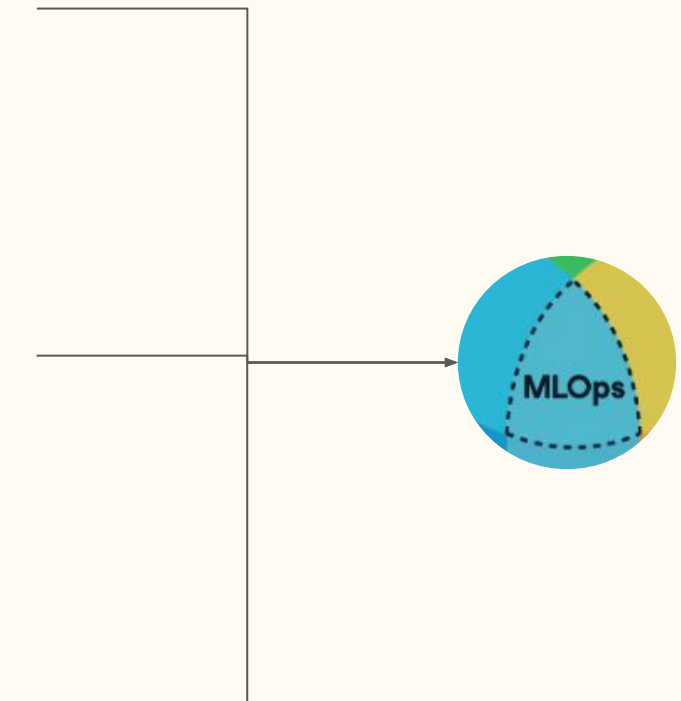
Software Engineering / DevOps



Data Engineering



Machine Learning



Infrastructure (e.g., cloud computing)



Software Engineering / DevOps

1

Software engineering principles are essential for reliable machine learning model development and operations

Learn more about these principles in our [Introduction to DevOps](#) course.

2

Many modern software engineering tools are indispensable for MLOps

Look at our interactive [Docker](#) or [Git](#) courses, for example.

3

Our software engineering curriculum is continuously growing

We will soon add new courses on testing in Python, for example, or CI/CD



Data Engineering

DataCamp's MLOps curriculum – and beyond



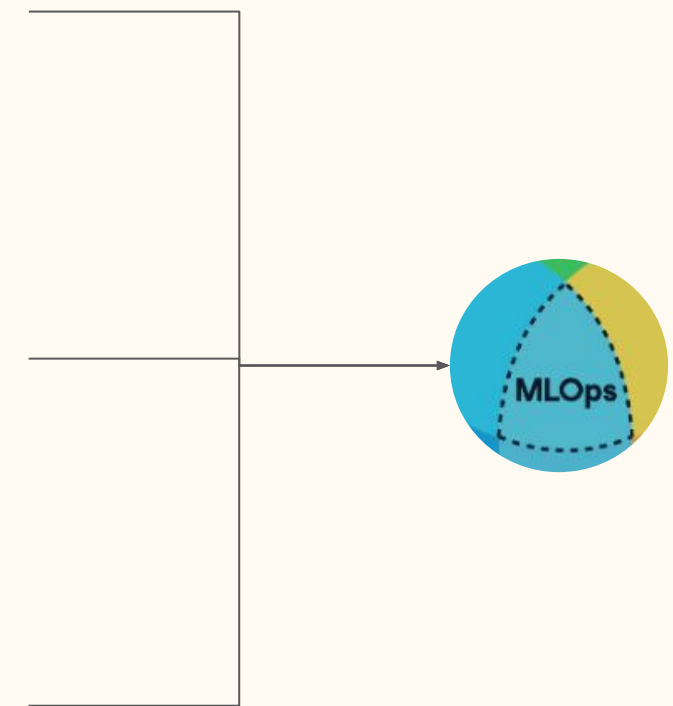
Software Engineering / DevOps



Data Engineering



Machine Learning



Infrastructure (e.g., cloud computing)



Data Engineering

1 Successful MLOps crucially depends on high-quality and consistently available data

Look, for example, at our [Introduction to Data Warehousing](#) course

2 DataCamp is heavily expanding our data engineering curriculum



Including new, interactive technologies such **dbt** or **Snowflake** (coming soon)

3 Offering new certifications

[Data Engineer Associate Certification](#) (available)
Professional Data Engineer Certification (early 2024)



Machine Learning

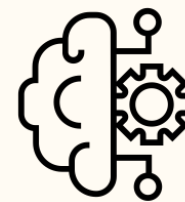
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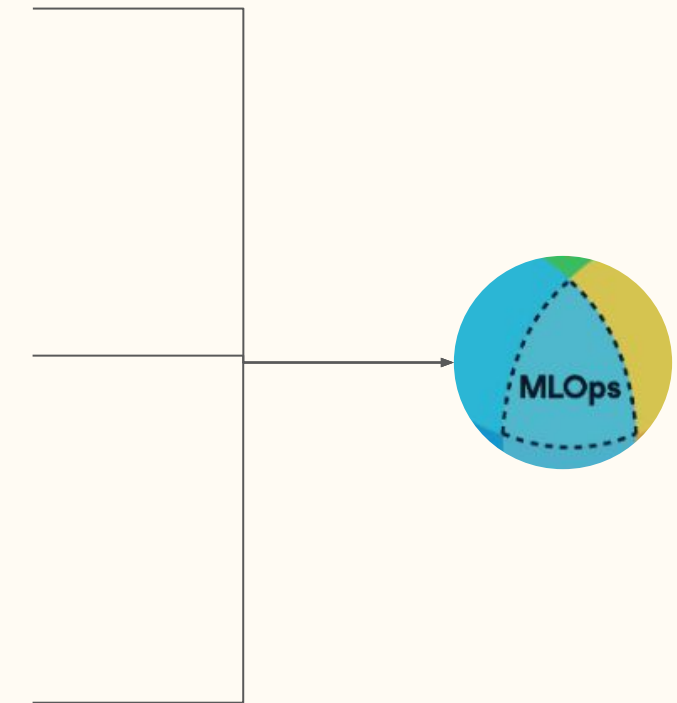
Software Engineering / DevOps



Data Engineering



Machine Learning



Infrastructure (e.g., cloud computing)



Machine Learning

1

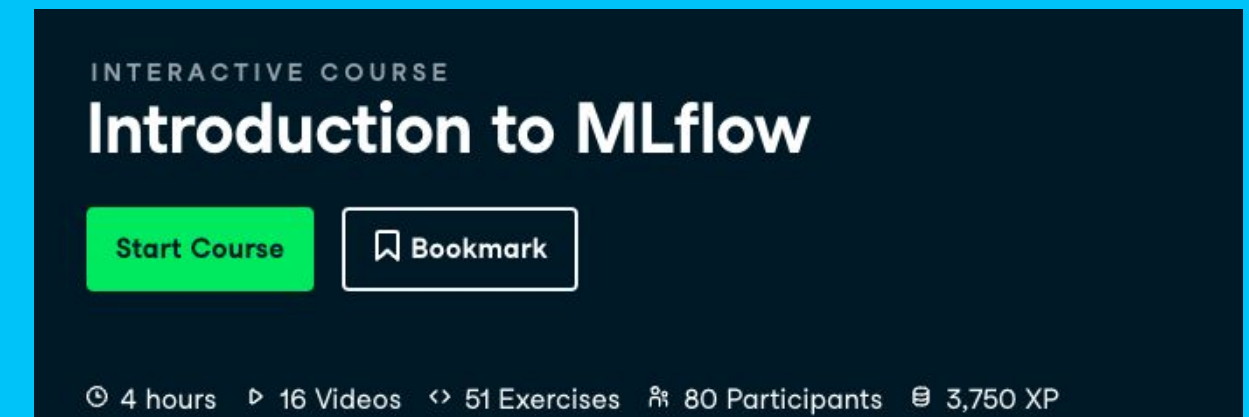
Data science and programming at the core of machine learning algorithm development

DataCamp provides hundreds of courses focusing on programming and machine learning which cover the core part of ML development. Important is as a programming language, in particular, Python, and on the machine learning-side topics such as training, feature selection, and supervised learning.

2

Newer courses focus on deployment, operations, monitoring, and maintenance of machine learning products

E.g., the brand-new (interactive) [Introduction to MLflow](#) course



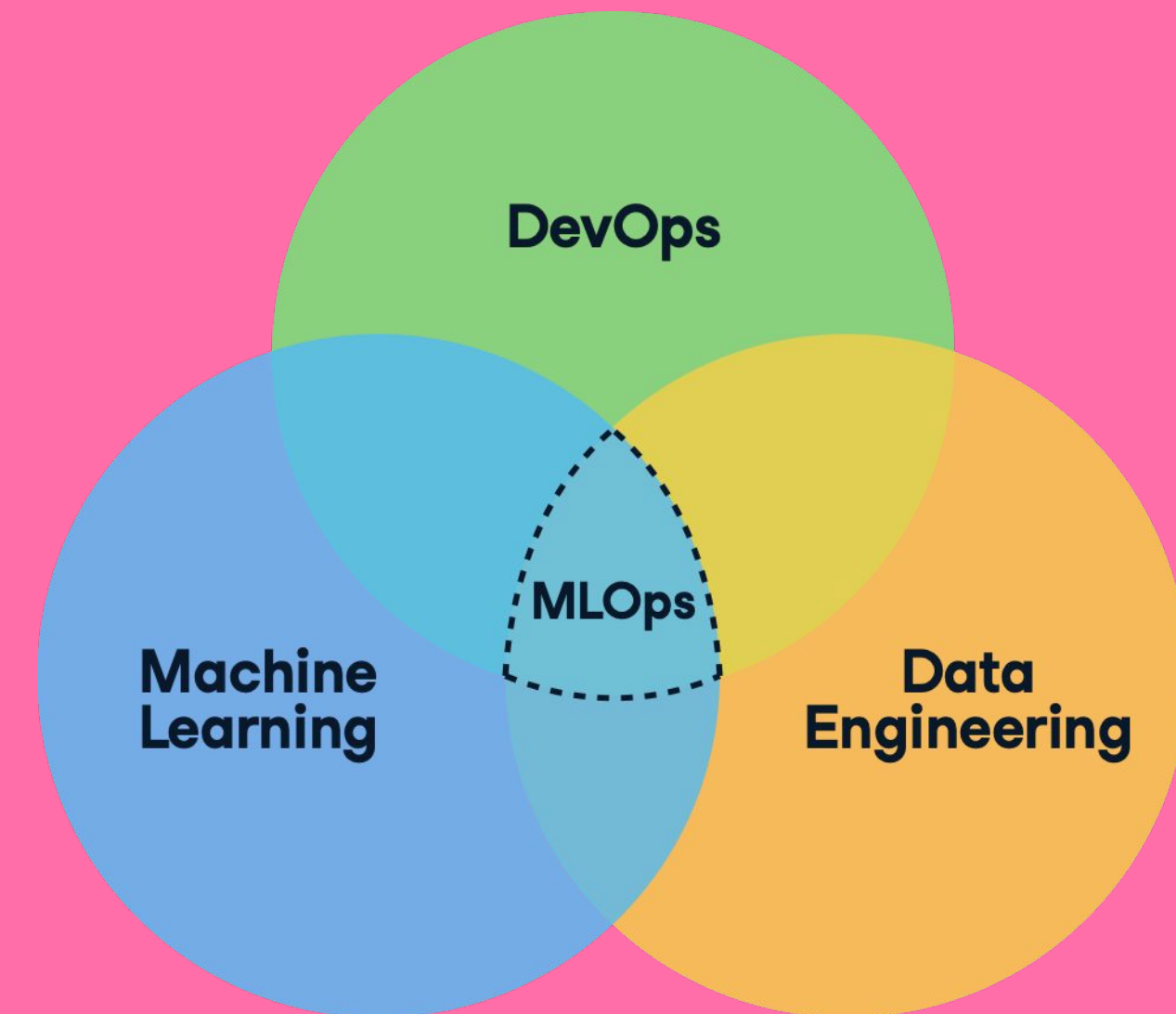
MLOps

1 Bringing it all together in our MLOps curriculum

Our MLOps curriculum will bring the most critical aspects of machine learning, data engineering, and software engineering together and equip learners with the skills required to not only develop highly accurate models but also deploy them to production, operate, and monitor them. It will focus on the entire MLOps-life cycle, from designing machine learning applications with a high business impact to replacing models in production without disturbing user experience.

2 Offering new certifications (see next slides)

MLOps Fundamentals Skill Track (available)
Machine Learning Engineer Track (H2 2023)



Topics covered in DataCamp's MLOps curriculum

Designing & Developing ML applications

- Adopting an MLOps mindset
- The MLOps architecture: feature stores, model registries...
- Experiment tracking
- Reproducibility
- Scaling

Deploying ML applications

- CI/CD
- Deployment strategies
- Containerization and Docker
- APIs
- Testing models

Operating ML applications

- CM/CT
- Writing maintainable code
- Data drift and concept drift
- Model failure

Automation



MLOps Fundamentals Track

- 1 MLOps Concepts
- 2 Developing Machine Learning Models for Production
- 3 MLOps Deployment and Life Cycling
- 4 Fully Automated MLOps

SKILL TRACK

MLOps Fundamentals

Dive into the foundations of Machine Learning Operations (MLOps), learning the core concepts of productionizing and monitoring machine learning models to add business value! This skill track covers the complete life-cycle of a machine learning application, ranging from the gathering of business requirements to the design, development, deployment, operation, and maintenance stages.

This track includes conceptual courses designed to help you expand your data science knowledge into the world of production machine learning software!...

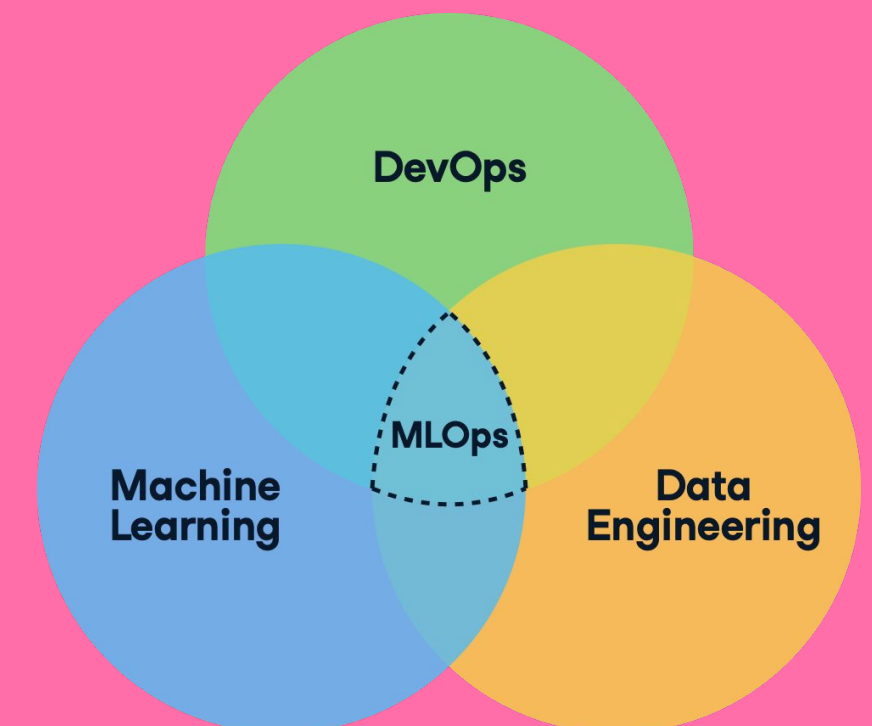
[Read More](#)

Switch Track

 Theory  14  4 Courses

The MLOps Fundamentals Track provides an in-depth conceptual understanding of all the topics involved in MLOps such as gathering business requirements, developing models, applying software engineering best practices, and replacing models in production.

[Enroll!](#)



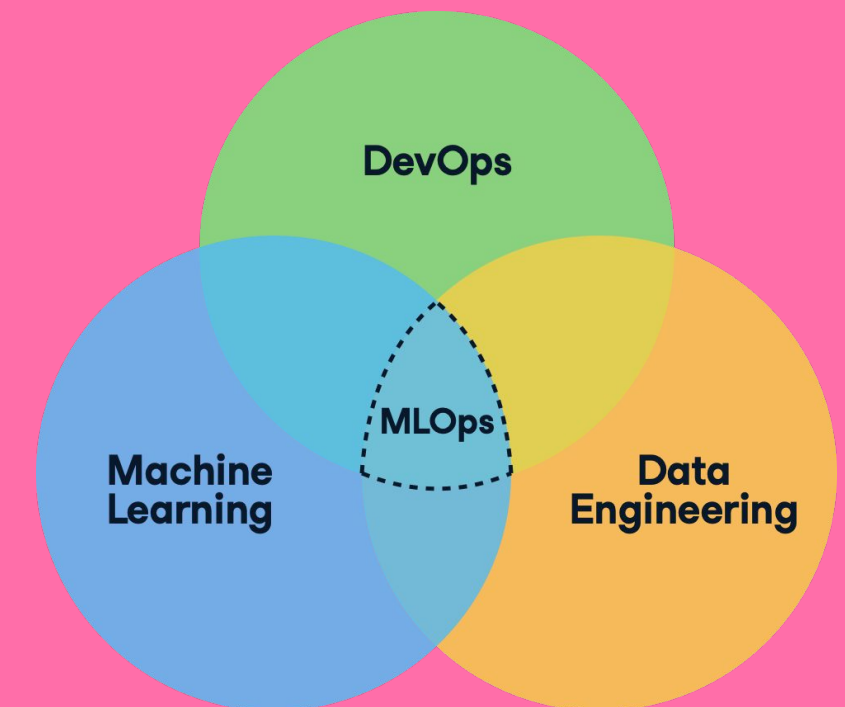
A Revised Machine Learning Engineer Track

- 1 MLOps Concepts
- 2 Introduction to Shell
- 3 Developing Machine Learning Models for Production
- 4 Introduction to Docker
- 5 MLOps Deployment and Life Cycling
- 6 Introduction to MLflow
- 7 CI/CD for Machine Learning
- 8 Project: Predicting Car Insurance Application Outcomes
- 9 Post-Deployment Machine Learning Concepts
- 10 Post-Deployment Machine Learning (Python)¹
- 11 Fully Automated MLOps
- 12 Introduction to Data Pipelines
- 12 End-to-End Machine Learning

¹ will be added later to the track

The Machine Learning Engineer Career Track will build upon tracks such as Data Scientist in Python or Machine Learning Scientist in Python and focus on deployment and operations. Besides Python, it will cover technologies such as Docker, MLflow, NannyML, and YAML.

Coming in H2 2024



Outlook: Cloud Computing

Models are nowadays (usually) not deployed on-premise anymore. The cloud offers a seamless way to train, deploy, and manage machine learning applications without the complexity of creating and maintaining an intricate architecture. We will therefore add more interactive cloud content soon, with an emphasis on machine learning and data engineering. So, stay tuned!





3

Getting started with MLOps



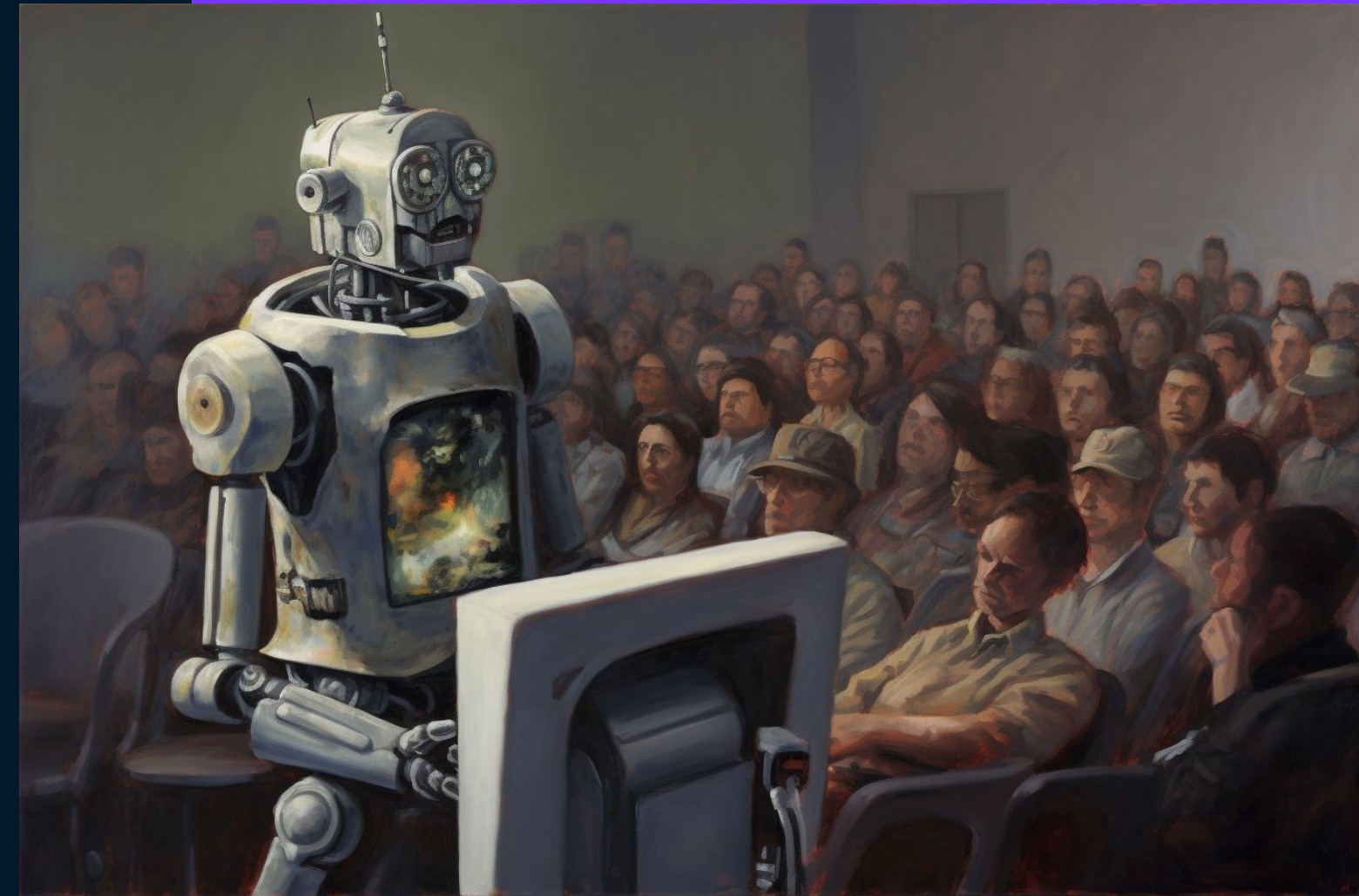
Recap

1 MLOps and its significance

MLOps provides a framework for data teams to designing, deploying and monitoring machine learning models at scale. However, only a fraction of organizations are currently adopting MLOps — with lack of key skills being a key factor in the lack of MLOps adoption

2 A deep dive into DataCamp's MLOps curriculum

We want to allow you to learn precisely these diverse skills preventing the widespread adoption of MLOps and leveraging the impact of machine learning. With this aim, we are introducing two specialized DataCamp Tracks: 'Fundamentals of MLOps' and 'Machine Learning Engineering.' Complementing these, we are broadening our course offerings to encompass key related disciplines, including data engineering and software engineering.



How do I **get started** with DataCamp?

DATA CAMP PREMIUM

Sign up for DataCamp Premium today

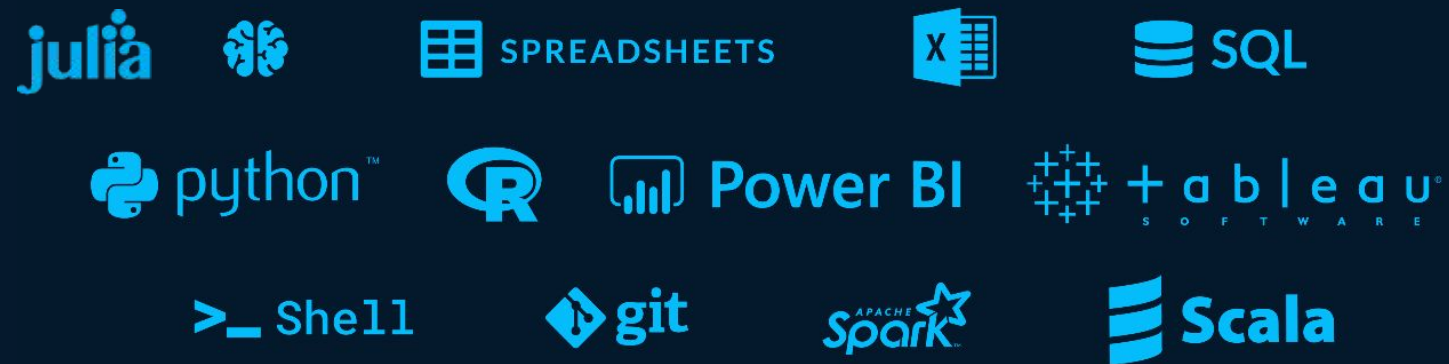
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4.5+ ★★★★★

Average course rating from our community of over 10M learners

10M+

Learners have upskilled using DataCamp



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Looking to provide unlimited access to **everyone** in your organization? Speak to sales about our unlimited plan

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Microsoft

Deloitte.

HSBC

PayPal

Uber

ebay

CREDIT SUISSE

4.5+ ★★★★★

Average course rating from our community of over 10M learners

8/10

Top consulting companies use DataCamp to upskill their team

190

Government agencies and nations upskill and innovate using DataCamp





FOR TEAMS
SPEAK TO SALES

Q&A



FOR INDIVIDUALS
GET STARTED





FOR TEAMS
SPEAK TO SALES

Thank you!



FOR INDIVIDUALS
GET STARTED

