iterative

Course Introduction

Lesson 1

DVC tools for Data Scientists & Analysts

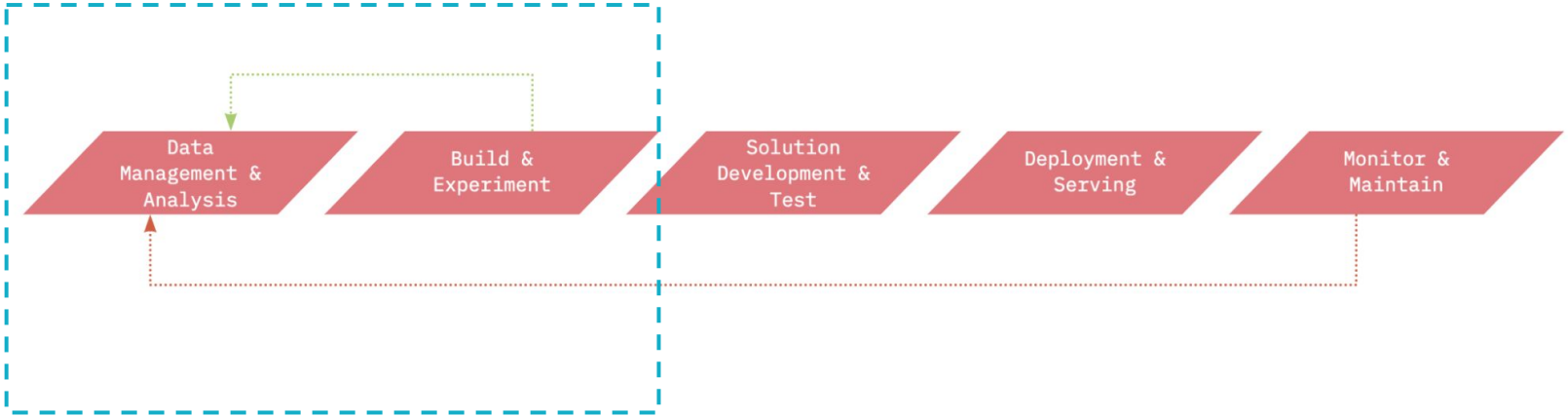
2021

Lesson Outline

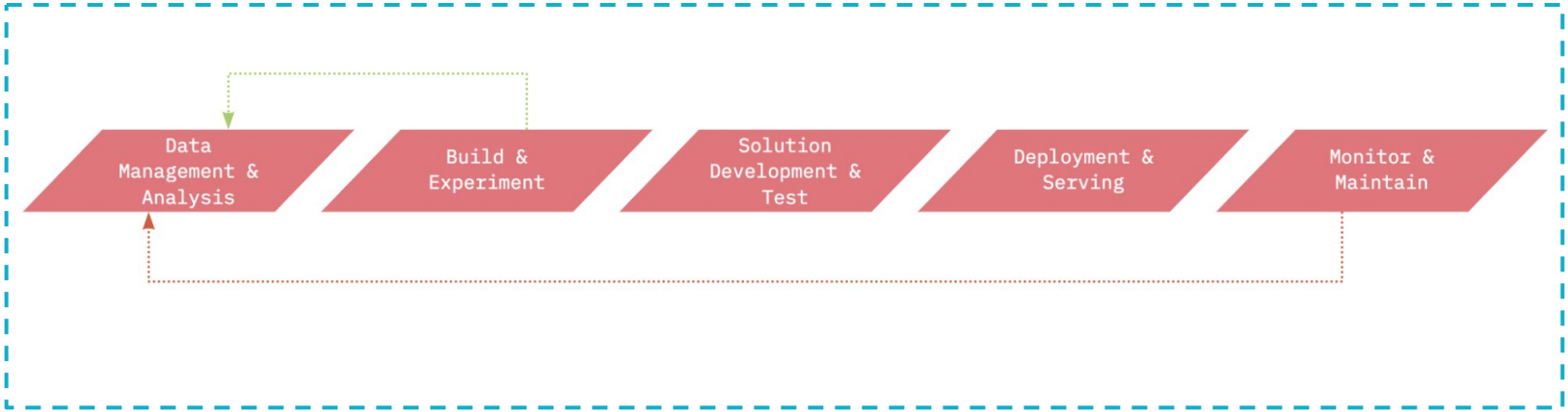
- Motivation
- What is DVC?
- What is DVC Studio?
- Course objectives
- Course structure

Motivation

Machine Learning Workflow



Machine Learning Workflow



Common DS/ML Issues

- Difficult sharing & collaborating
- Inefficiency & work duplication
- Slow updates
- Pipelines not reliable or reproducible
- Data quality issues
- Model metrics tracking

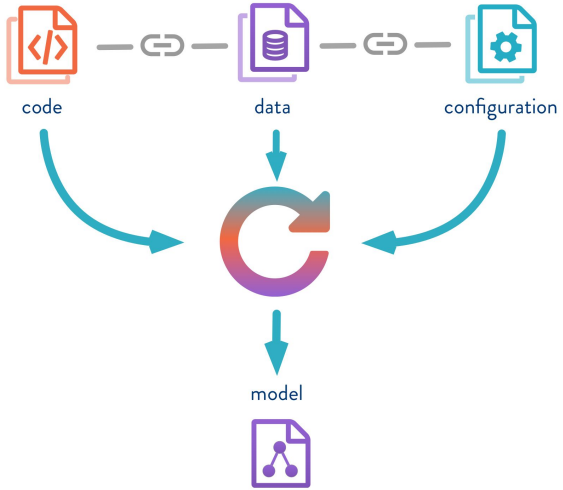
Good practices for ML projects

1. **Project structure & dev environment**
   - Organize a project repository
   - Environment dependencies control
2. **Coding (software development)**
   - Follow style-guides
   - Code version control (Git)
3. **Documentation & task tracking**
   - Document your code, experiments, and findings
   - Task tracking
4. **ML pipelines development & experiments**
   - Automated pipelines
   - Control run params
   - Models and artifacts version control
   - Experiment results tracking
   - Reproducible experiments

What is DVC?

What is DVC?

- Platform to manage machine learning experiments and pipelines
- Tool for data and model versioning
- Data access, sharing and collaboration tool
- Link between your code and data

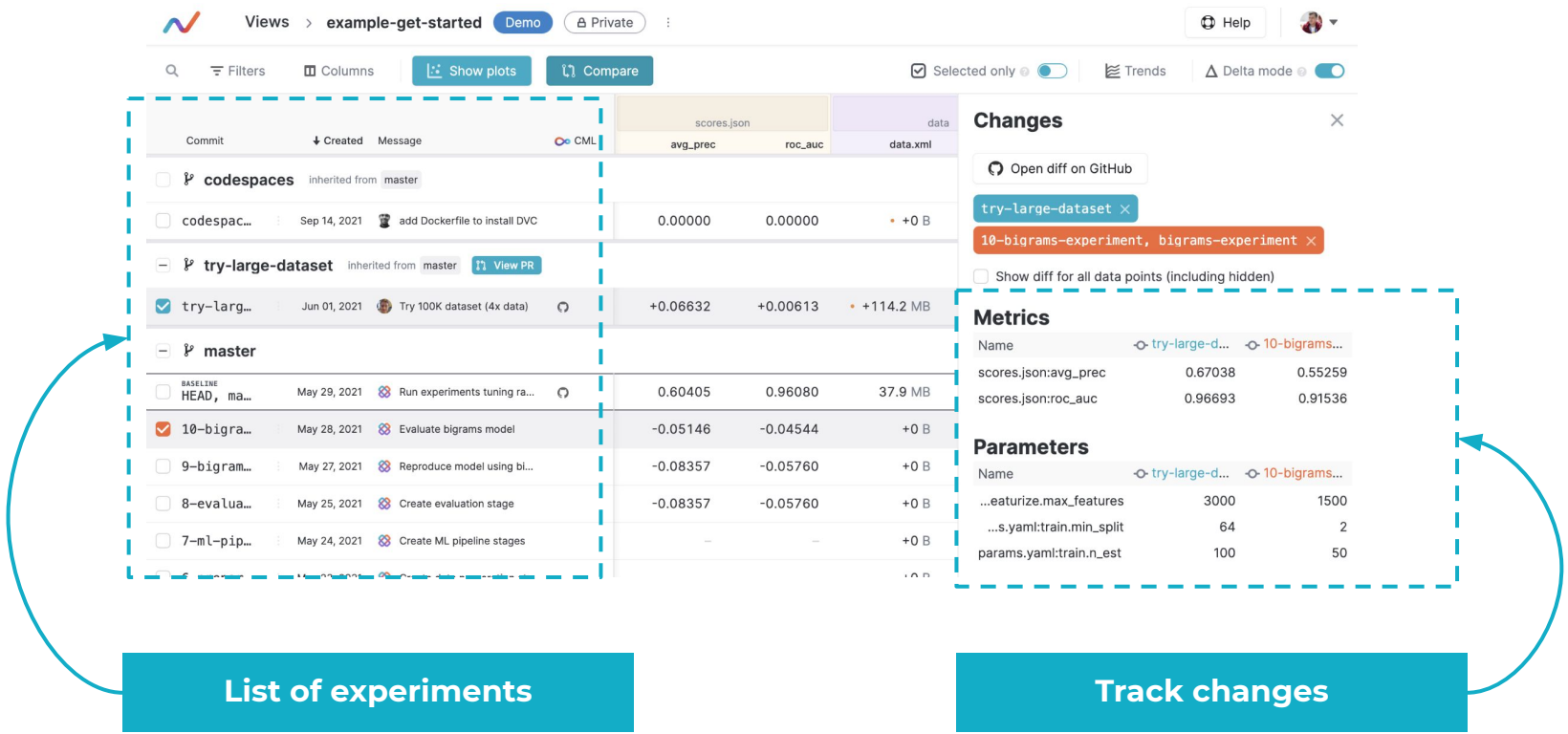


DVC Team

Welcome video

What is DVC Studio?

Studio: UI for ML experiments and metrics tracking



List of experiments

Track changes

DVC Studio Team

Welcome video

Course objectives

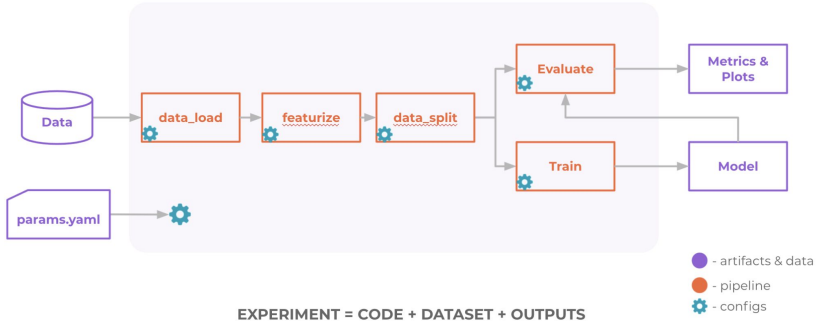
Course objectives

1. Improve ML experimenting & development processes
2. Bring good engineering practices into ML
3. Improve team collaboration
4. Learn & integrate tools for ML projects

What will you learn?

How to...

1. Build automated pipelines and reproducible experiments

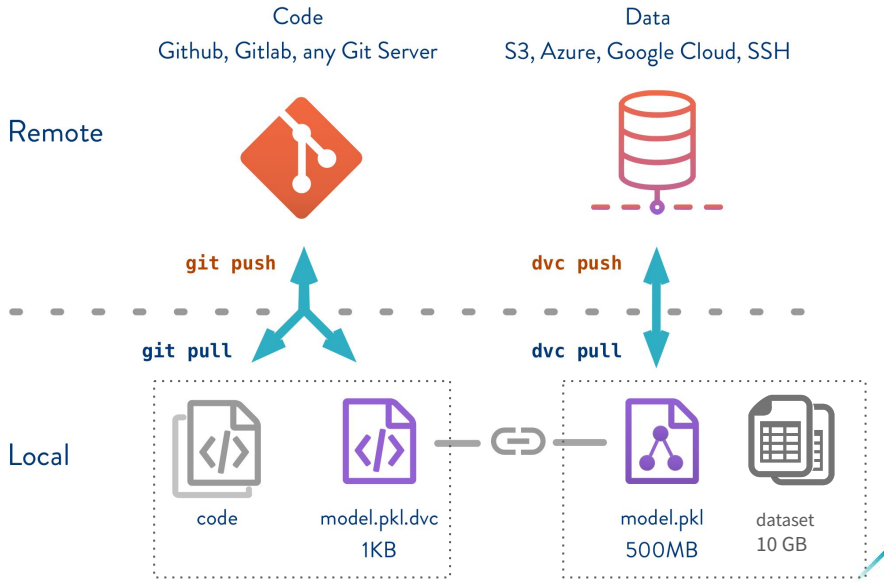


EXPERIMENT = CODE + DATASET + OUTPUTS

What will you learn?

How to...

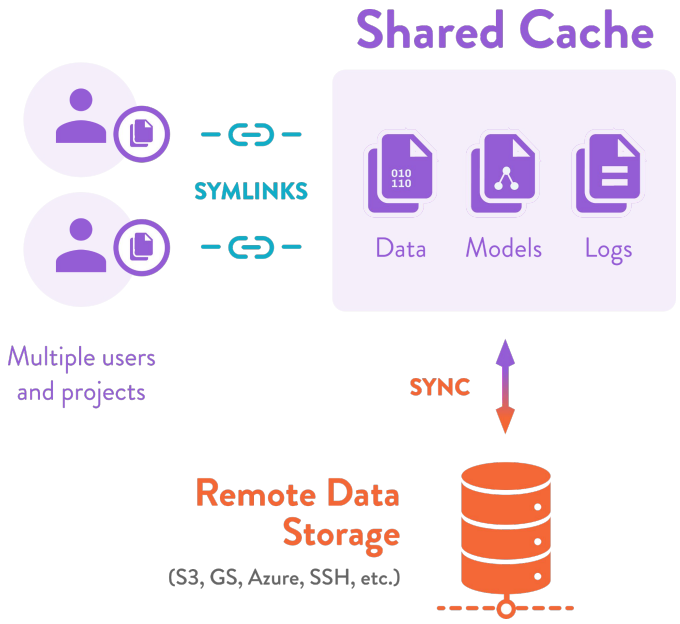
1. Build automated pipelines and reproducible experiments
2. Manage data and model versioning



What will you learn?

How to...

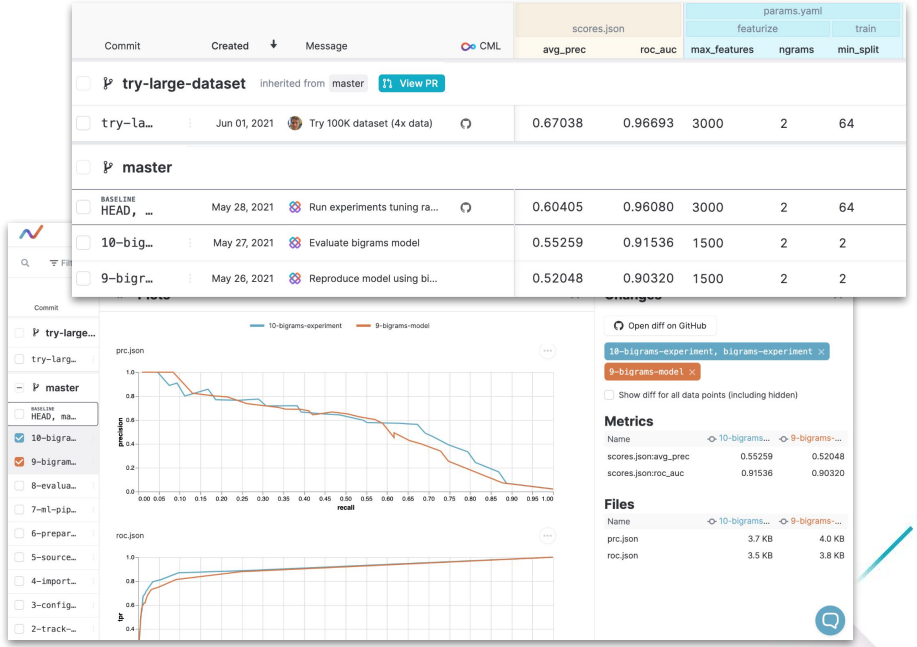
1. Build automated pipelines and reproducible experiments
2. Manage data and model versioning
3. Organize your project code and team collaboration



What will you learn?

How to...

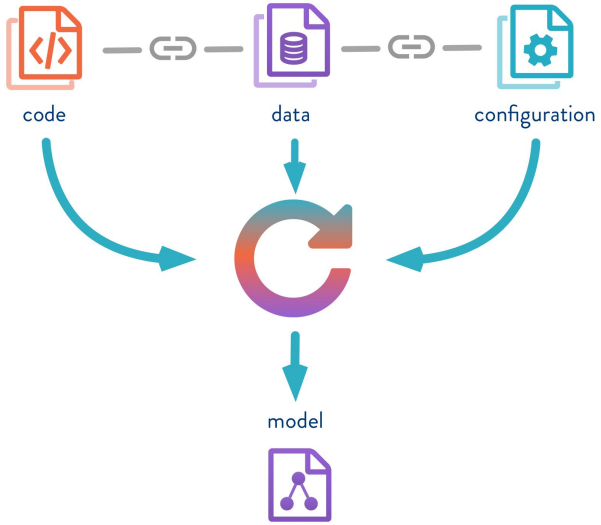
1. Build automated pipelines and reproducible experiments
2. Manage data and model versioning
3. Organize your project code and team collaboration
4. Visualize metrics & collaborate on ML experiments



What will you learn?

How to...

1. Build automated pipelines and reproducible experiments
2. Manage data and model versioning
3. Organize your project code and team collaboration
4. Visualize metrics & collaborate on ML experiments
5. Integrate DVC and DVC Studio into your own project



Course structure

Course lessons

Lesson 1. Course Introduction

Lesson 2. Practices and Tools for Efficient Collaboration in ML Projects

Lesson 3. Pipeline Automation and Configuration Management

Lesson 4. Versioning Data and Models

Lesson 5. Visualizing Metrics & Comparing Experiments with DVC and Studio

Lesson 6. Experiment Management and Collaboration

Lesson 7. Tools for Deep Learning

Lesson 8. Review of Advanced Topics and Use Cases

Course content and tools

Format

- Video lectures with slides
- Code examples and demos
- Discussions in Discord

Tools

- Jupyter Notebooks
- Python
- Git
- DVC
- DVC Studio

Important Prerequisites

Skills

- Basic knowledge of Python
- Basic CLI
- Basic Git

System

- Software: Python, Git, Docker, DVC
- ~ 1 GB disk space
- min 4 GB RAM is recommended

Checklist before take-off

1. Python installed
2. Python packages: pip, virtualenv
3. Git installed
4. Registered at the class Discord channel
5. **Say Hello** to the class and share your expectations of this course

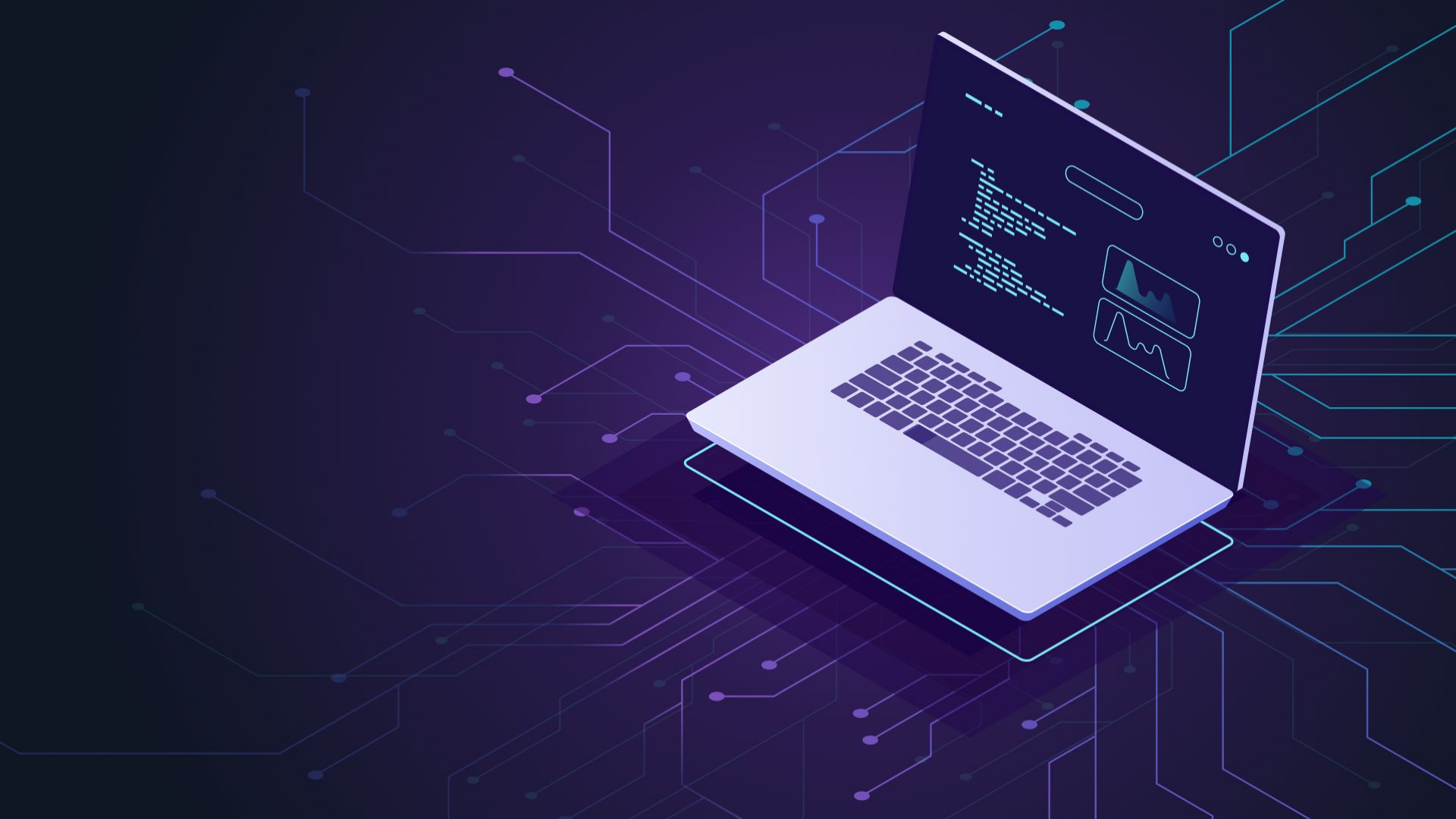
Demo

Where to find more material, useful links, and Discord channel

What have we learned?

What have we learned?

1. Course objectives and structure
2. What is DVC
3. What is DVC Studio



Links

- Data Science blueprint
  https://data-science-blueprint.readthedocs.io/en/latest/presentation/schema.html