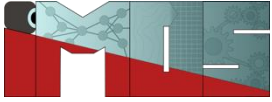


EPFL



Assignment 0

Introduction to Scientific Python

Amaury WEI
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11.09.2025



Prof. Olga FINK



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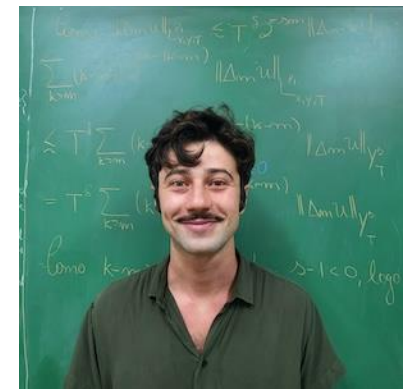
Vinay SHARMA



Raffael THEILER



Zepeng ZHANG



Arthur BIZZI

Go to

<https://menti.com>

Enter the code

7239 9826

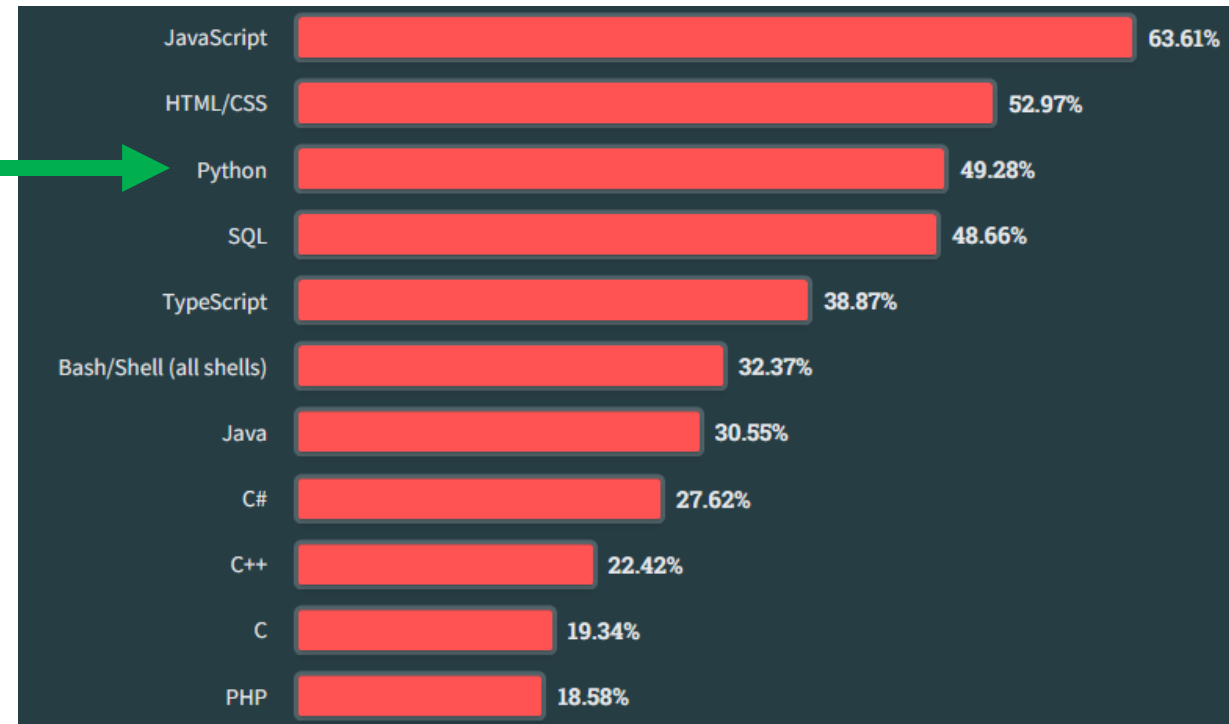


Python is great

- Very popular
- Versatile, flexible, easy to get started
- Widely used for data science
- Active community

But ...

- Performance can be limited
- Mistakes can arise quickly
- Complex projects can get messy



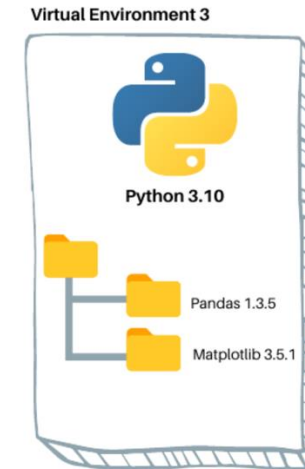
[Stack Overflow Developer Survey 2023](#)

Recommended IDE



Visual Studio Code

Virtual Environment



Recommended VS Code extensions:

[Python](#) + [Jupyter](#) + [Black Formatter](#) + [autoDocstring](#)

Consistent Coding Style

Function	function, my_function
Variable	x, var, my_variable
Class	Model, MyClass
Method	class_method, method
Constant	CONSTANT, MY_CONSTANT, MY_LONG_CONSTANT
Module	module.py, my_module.py
Package	package, mypackage

[PEP8 style guide](#)

Automatic Formatting



Version Control



GitLab

gitlab.epfl.ch

Documentation

```
def connect_to_next_port(self, minimum: int) -> int:
    """Connects to the next available port.

    Args:
        minimum: A port value greater or equal to 1024.

    Returns:
        The new minimum port.

    Raises:
        ConnectionError: If no available port is found.
    """
```

[VS Code](#)
[autoDocstring](#)

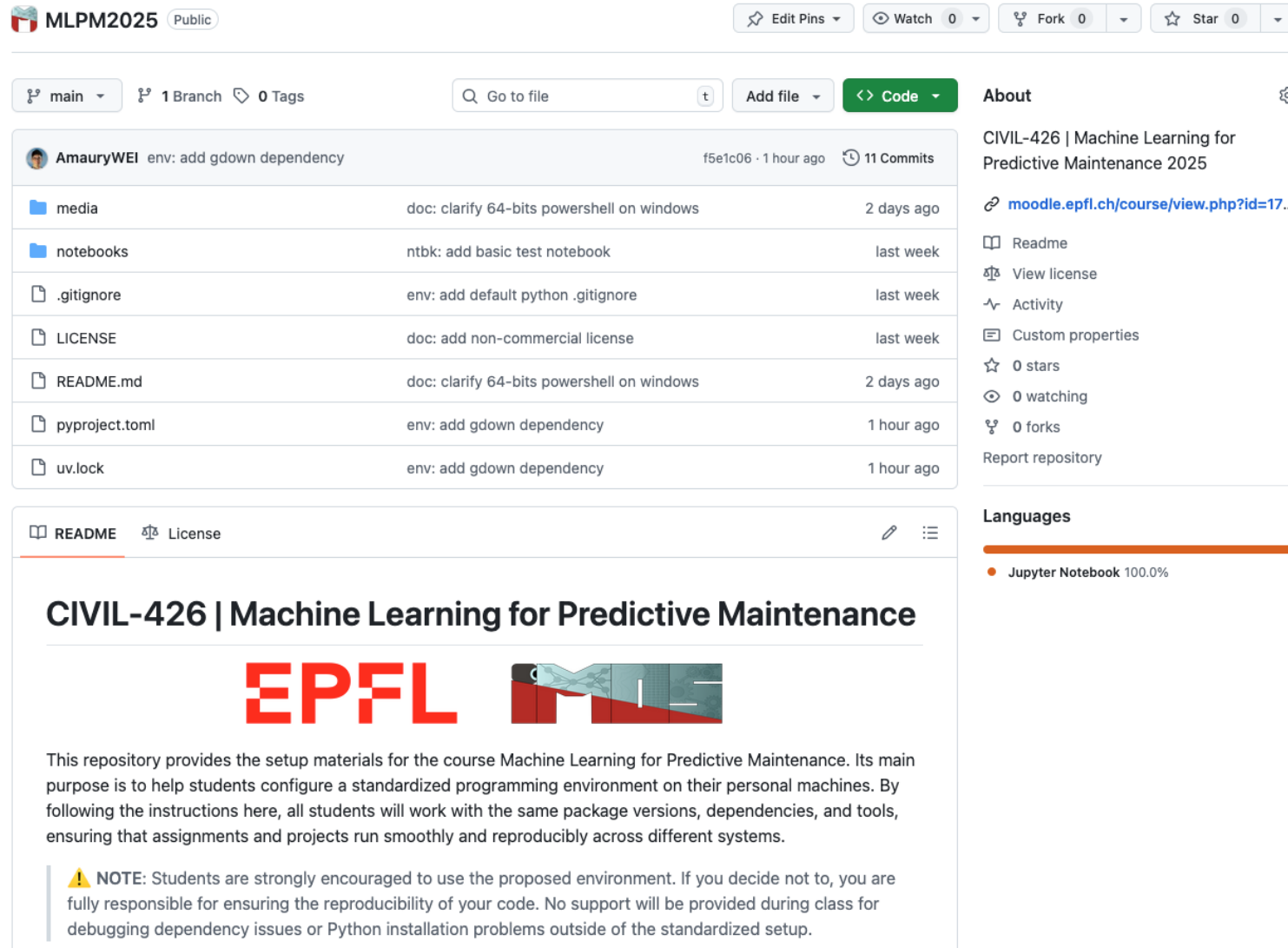
The screenshot shows the uv documentation page. The main heading is "uv" with the subtitle "An extremely fast Python package and project manager, written in Rust." Below this is a horizontal bar chart comparing the installation time of dependencies for four tools: uv, poetry, pdm, and pip-sync. The x-axis represents time in seconds, ranging from 0s to 4s. The bars show the following times: uv (0.06s), poetry (0.99s), pdm (1.90s), and pip-sync (4.63s). The caption below the chart reads "Installing Trio's dependencies with a warm cache." The left sidebar contains a navigation menu with items like "Introduction", "Getting started", "Installation", "First steps", "Features", "Getting help", "Guides", "Installing Python", and "Running scripts". The right sidebar contains a list of links: "Highlights", "Installation", "Projects", "Scripts", "Tools", "Python versions", "The pip interface", and "Learn more".

Tool	Installation Time (s)
uv	0.06s
poetry	0.99s
pdm	1.90s
pip-sync	4.63s

Installing Trio's dependencies with a warm cache.

<https://docs.astral.sh/uv/>

Setting-up the Development Environment



MLPM2025 Public


main 1 Branch 0 Tags

Go to file Add file Code

media	doc: clarify 64-bits powershell on windows	2 days ago
notebooks	ntbk: add basic test notebook	last week
.gitignore	env: add default python .gitignore	last week
LICENSE	doc: add non-commercial license	last week
README.md	doc: clarify 64-bits powershell on windows	2 days ago
pyproject.toml	env: add gdown dependency	1 hour ago
uv.lock	env: add gdown dependency	1 hour ago

README License

CIVIL-426 | Machine Learning for Predictive Maintenance



This repository provides the setup materials for the course Machine Learning for Predictive Maintenance. Its main purpose is to help students configure a standardized programming environment on their personal machines. By following the instructions here, all students will work with the same package versions, dependencies, and tools, ensuring that assignments and projects run smoothly and reproducibly across different systems.

NOTE: Students are strongly encouraged to use the proposed environment. If you decide not to, you are fully responsible for ensuring the reproducibility of your code. No support will be provided during class for debugging dependency issues or Python installation problems outside of the standardized setup.

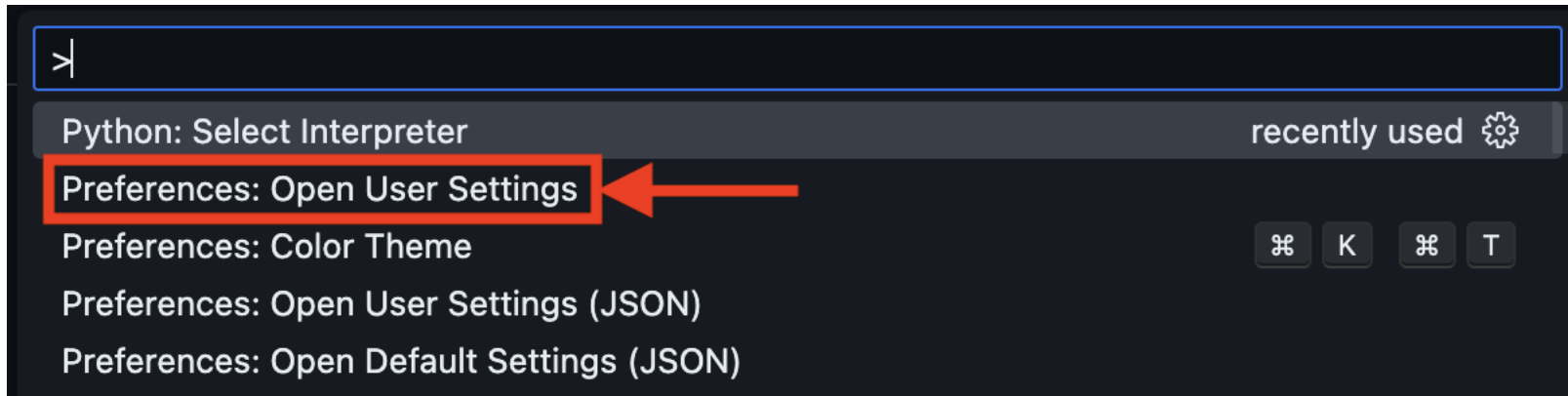
About: CIVIL-426 | Machine Learning for Predictive Maintenance 2025

Readme, View license, Activity, Custom properties, 0 stars, 0 watching, 0 forks, Report repository

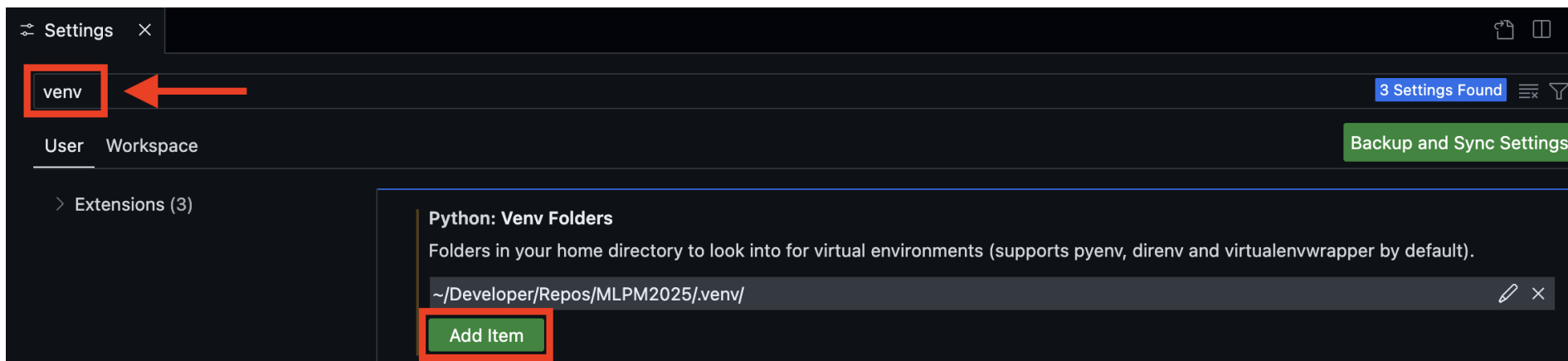
Languages: Jupyter Notebook 100.0%

■ <https://github.com/EPFL-IMOS/MLPM2025>

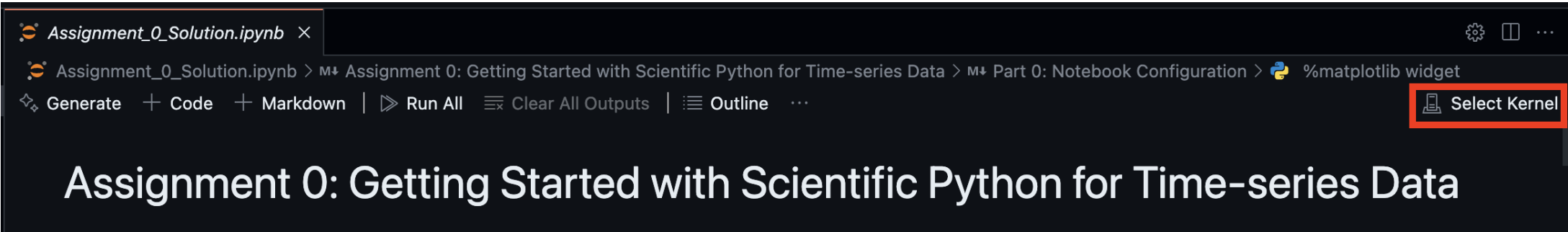
1. Open **View > Command Palette** and type **User Settings**



2. Add a new entry to **Venv Folders** with the location of the uv `.venv` folder



3. Open the `Assignment_0_Solution.ipynb` and click on **Select Kernel**



4. Select the `mlpm2025` virtual environment



Using Jupyter web (not recommended)

1A. macOS/Linux env. activation

```

awei@IMOS-C018202M:~/Developer/Repos/MLPM2025
> source .venv/bin/activate
~/Developer/Repos/MLPM2025 main mlpm2025 09:59:34
>

```

1B. Windows env. activation

```

PowerShell
PS C:\Users\awei\Developer\Work\Repos\MLPM2025> .\.venv\Scripts\activate.ps1
(mlpm2025) PS C:\Users\awei\Developer\Work\Repos\MLPM2025>

```

2. Start Jupyter notebook

```

awei@IMOS-C018202M:~/Developer/Repos/MLPM2025
> source .venv/bin/activate
~/Developer/Repos/MLPM2025 main mlpm2025 10:11:21
> jupyter notebook

```

<https://noto.epfl.ch/hub/>

EPFL's online JupyterLab hub for notebooks, but ...

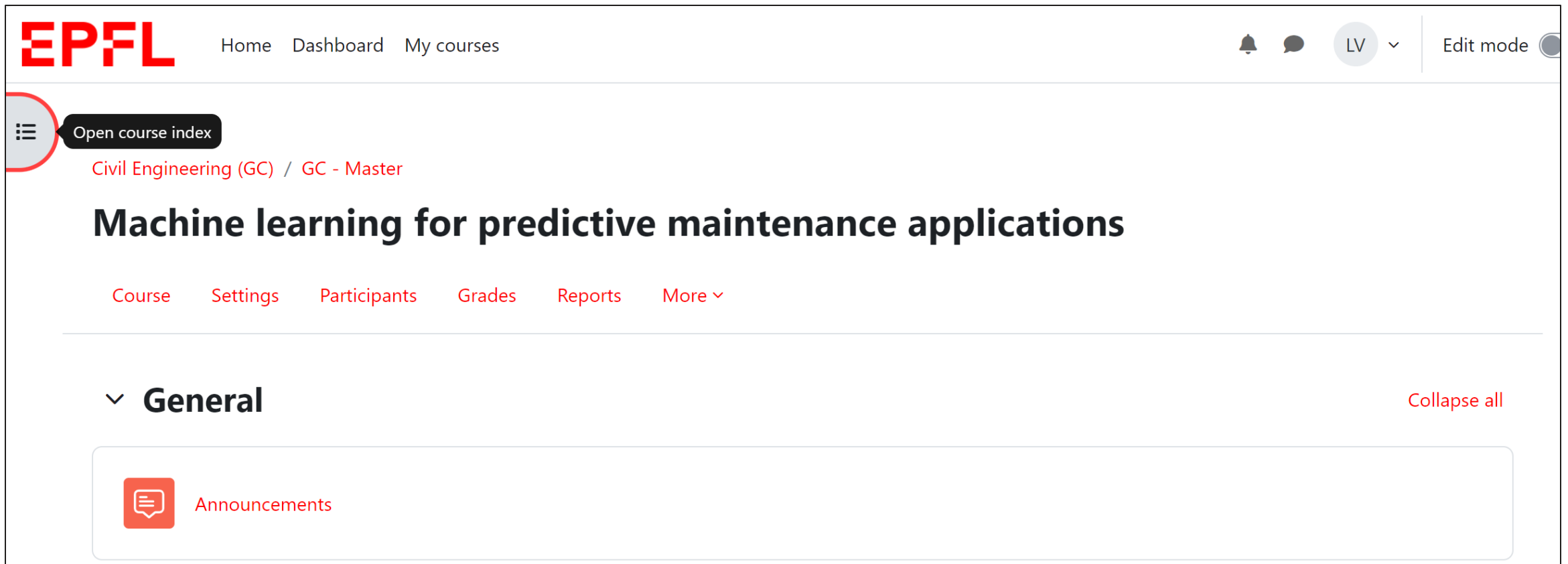
- No GPU resources
- Limited control over the environment
- Limited code editor

Recommendation:

Learn to setup and use your own environment



`https://moodle.epfl.ch/course/view.php?id=17052`



The screenshot shows a Moodle course page for EPFL. At the top left is the EPFL logo, followed by navigation links: Home, Dashboard, and My courses. On the right, there are icons for notifications, messages, a user profile (LV), and an Edit mode button. A sidebar on the left contains a menu icon and a link to 'Open course index'. The main content area shows the course path 'Civil Engineering (GC) / GC - Master' and the course title 'Machine learning for predictive maintenance applications'. Below the title are navigation tabs: Course, Settings, Participants, Grades, Reports, and More. A 'General' section is expanded, showing an 'Announcements' icon and text.

<https://edstem.org/eu/courses/2575/discussion>

👋 Welcome to CIVIL-426 on Ed Discussion! #1



Amaury Wei **STAFF**
2 hours ago in [General](#)

UNPIN

STAR

WATCHING

1 VIEW



👋 Welcome to CIVIL-426 on Ed Discussion!

We'll be using Ed Discussion as our main Q&A platform this semester.

It's the fastest way to get help — from the teaching team **and** your peers — on both course content and administrative matters.

💡 **Tips** for making the most of Ed:

- 🔍 **Search first** before posting (your question might already be answered!)
- ❤️ **Upvote** questions and answers you find useful
- 👤 **Don't hesitate to ask!** You can even post **anonymously** if you prefer
- 👉 **Contribute** by answering when you can — teaching is learning!
- 📄 **Share** interesting course-related resources with the community

👉 Need a quick tour? Check out the [Quick Start Guide](#)

We're excited to see your questions, discussions, and ideas here. Let's make this a collaborative and supportive semester! 🚀

— *The CIVIL-426 Teaching Team*

Comment Edit Delete ...



Questions



Environment Setup
until 9:00am