MepML

Plataforma de avaliação de modelos ML/AI

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Abstract

The need to handle large amounts of data and advances in processing technologies have led to the mass development of intelligent systems. Machine Learning algorithms are often applied to optimise various real-life scenarios, leading to cost savings and increased productivity. Therefore, it is imperative to promote better education in this field of study. This project aims to provide an intuitive and collaborative platform, where students can improve their skills, by solving exercises created by teachers and uploading the results of their models for automatic evaluation.

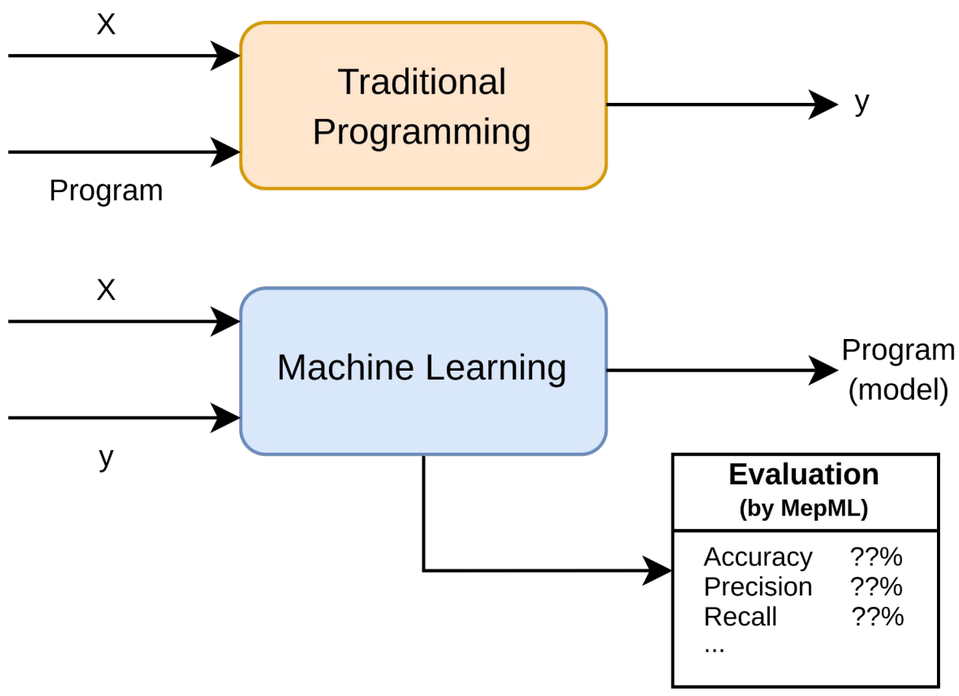

Fig 1 - Process reengineering with MepML.

Methods

Some platforms aimed at publishing Machine Learning exercises lack in some features and there is no clear distinction between the roles of student and teacher as actors in the systems. With that in mind, we developed a multi-layered web application, where teachers can mainly create and manage ML exercises and students can solve them.

We emphasise that the models submitted by students are previously trained by them. Then, they simply upload the resultant prediction dataset to our system, which performs a quick statistical analysis and returns the metric scores.

Table 1/2 - Usability tests results.

Teacher Tasks	Average Difficulty (1-5)
1 - login	1
2 - create class	2.6
3 - check metrics	1
4 - create mtric	1.8
5 - create exercise	1.6
6 - check results	1.4

Student Tasks	Average Difficulty (1-5)
1 - login	1
2 - select class	1
3 - go to "Assignments"	1
4 - download datasets	1
5 - submit predictions	1

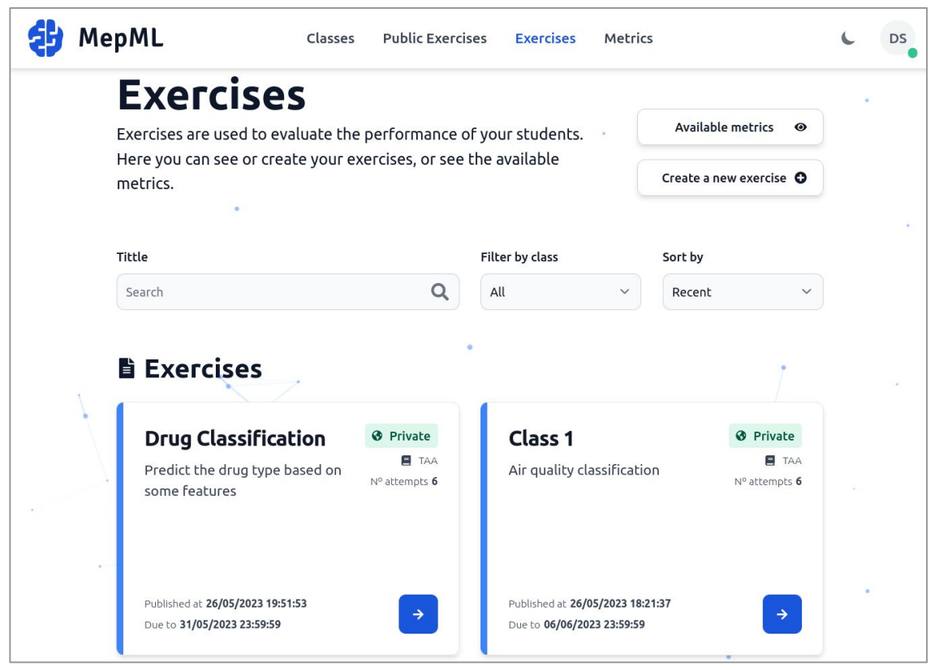

Fig 2 - Professor exercises page.

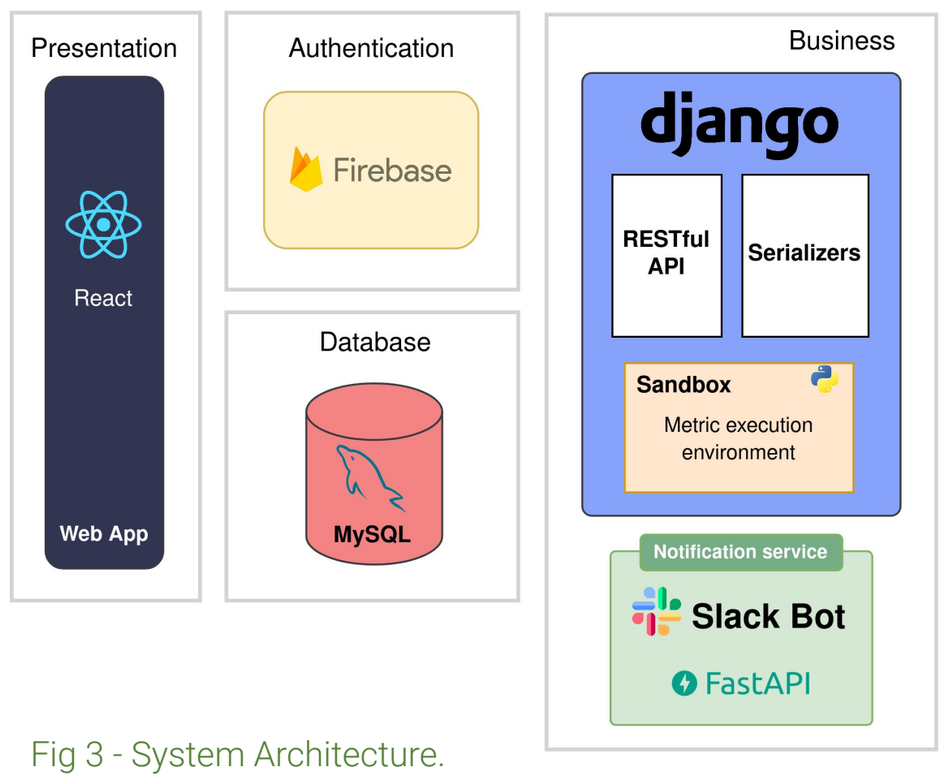

Fig 3 - System Architecture.

Conclusion

The project demanded much of the knowledge acquired during the bachelor's degree, enforcing an iterative and incremental development approach, and the adoption of good software engineering practices, such as quality assurance testing. So, we believe that the proposed software solution will be a good asset for the university, contributing to the effectiveness of part of the learning process in Computer Science, Mathematics, and other courses.

References

Serban, A., van der Blom, K., Hoos, H., & Visser, J. (2020). "Adoption and Effects of Software Engineering Best Practices in Machine Learning", Proceedings of the 14th ACM / IEEE International Symposium on Empirical Software Engineering and Measurement (ESEM),
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