Interview to Grigoris Tzionis

In this interview, we wanted to share the work of the staff directly involved in the research that leads to the most current educational innovations.

At Femxa we have spent many years of effort and dedication to European projects that involve innovation and development applied to the training environment, and now we would like to introduce some of the main figures involved.

Grigoris Tzionis has been chosen to tell us first-hand about the work of a researcher who applies new digital tools to educational research.

Grigoris is part of the Certh, Centre for Research and Technology Hellas (CERTH), located in the Thessaloniki Science Park, the one of the most important research centers in the European Union in terms of Horizon Projects. He is involved in a collaboration with Femxa on the analysis of training results in different types of courses applying machine learning and artificial intelligence technology.

Grigoris, we are interested in the professional organization of a researcher: do you plan a lot of meetings? Do you share your progress with colleagues? In short, how is the day-to-day life of a researcher in the training field?

In the realm of research, especially within the training field, effective communication and staying informed are key pillars of our day-to-day routine. While I do find myself involved in quite a number of meetings, I believe they play a crucial role in fostering collaboration and synergy among team members.

These meetings not only keep us aligned with our project goals but also provide a platform to exchange ideas and perspectives.When it comes to sharing progress, I typically connect with my senior colleagues to ensure we are on the right track.

Their insights and guidance are invaluable in shaping the direction of our research endeavors. Additionally, it helps maintain a sense of accountability and ensures that our work is consistently progressing.

In the training field, staying updated with the latest technologies and trends is paramount. To achieve this, I dedicate approximately 2 hours every week to continuous learning. This allows me to explore emerging technologies, gain new skills, and adapt to the evolving landscape.

Being well-informed ensures that our research remains relevant and at the cutting edge of the field. So, while meetings are a part of our routine, they serve as a means to an end: fostering collaboration and ensuring our projects are on track.

Sharing progress with senior colleagues adds valuable perspectives, and dedicating time to learning keeps us at the forefront of the ever-changing training landscape.

Could you please explain to us how the opportunity to work with Femxa in your current study arose?

The opportunity to collaborate with Femxa in our ongoing study emerged from our shared goal of addressing a pressing issue: course dropouts.

In the field of education and online courses, dropout rates can be a significant challenge. To tackle this issue effectively, we recognized the need to harness the power of Explainable AI (XAI) algorithms.

Our journey with Femxa began as we identified a common concern: understanding the underlying reasons behind course dropouts. Traditional analytics provided some insights, but we sought a deeper understanding. This is where XAI comes into play.

We believed that by leveraging XAI algorithms, we could not only predict dropout patterns but also explain why they occurred. Femxa, being forward-thinking and committed to enhancing the learning experience, shared our enthusiasm for this approach.

They saw the potential of using XAI to provide actionable insights and recommendations to reduce course dropouts. This shared vision led to a fruitful collaboration where we're now working together to implement and fine-tune XAI models tailored to Femxa's specific use cases.

In summary, our collaboration with Femxa arose from a mutual interest in leveraging XAI to address the challenge of course dropouts. It's an exciting partnership that allows us to apply cutting-edge AI techniques to understand and mitigate this issue effectively while providing clear explanations for each dropout scenario.

Grigoris Tzionis is currently managing a database of scores and results from our courses to develop an algorithm, based on machine learning, that looks for correlations between demographic data and the results of those courses.

Give us the details of the research you are currently conducting for us: How can artificial intelligence be trained to analyze student assessment results?

I'm currently engaged in a research project aimed at harnessing the power of Artificial Intelligence (AI), particularly Machine Learning (ML), to analyze student assessment results and predict course dropouts.

The primary objective is to develop predictive models that can identify students at risk of dropping out of a class, allowing for early intervention and support to improve retention rates.

Here are the key components of the research:

- **Data Collection and Management**: We have established a comprehensive database that collects and stores scores and results from various courses. This database is continually updated with new data to ensure its accuracy and relevance.

- **Feature Engineering**: One critical aspect of our research involves feature engineering, where we identify and extract relevant variables and attributes from the data. These features include demographic information such as age, gender, and educational background, as well as performance metrics from assessments and assignments.

- **Machine Learning Models**: We're developing and fine-tuning machine learning models, such as decision trees, logistic regression, and potentially more advanced techniques like neural networks. These models will be trained on historical data to predict the likelihood of a student dropping out based on their demographic and performance-related features.

- **Explainable AI (XAI)**: An essential part of our research involves the use of Explainable AI (XAI) techniques. Once our ML models make predictions, XAI algorithms step in to provide clear and interpretable explanations for these predictions. This transparency is crucial for understanding why a particular student is at risk of dropping out, as it reveals the contributing factors.

- **Early Intervention Strategies**: Based on the predictive insights provided by our models and the explanations generated by XAI, we aim to design early intervention strategies. These strategies may include personalized support, additional resources, or tailored educational pathways to help at-risk students stay engaged and succeed.

Our research is driven by the belief that AI can play a pivotal role in enhancing student outcomes by identifying challenges early and providing actionable insights to educators and institutions.

By combining the predictive capabilities of ML with the interpretability of XAI, we aim to empower educational organizations to make informed decisions and, ultimately, reduce dropout rates.

This research represents a proactive approach to addressing a significant challenge in education and demonstrates how AI can be leveraged for the benefit of both students and educational institutions.

Once we get that analysis, what benefits will these automated tasks provide to a training centre?

Once we obtain the analysis and insights into the factors contributing to dropouts, the benefits to a training center are significant and multifaceted. Here's a breakdown of the advantages:

Early Intervention

Identifying the specific features and factors that contribute to student dropouts allows the training center to intervene early. By recognizing at-risk students, the center can implement targeted support mechanisms to prevent them from leaving the course prematurely.

Personalized Support

Armed with insights, the training center can offer personalized support to struggling students. This might include additional tutoring, customized study plans, or resources tailored to address the identified issues.

Resource Optimization

Understanding the causes of dropouts helps in resource allocation. The training center can allocate resources more efficiently by focusing on areas that directly impact student retention, rather than spending resources indiscriminately.

Curriculum Enhancement

Insights gained from the analysis can inform curriculum improvements. The training center can adapt course content, teaching methods, and assessments to better align with the needs and challenges of students, potentially reducing dropout rates.

Enhanced Student Experience

By proactively addressing factors contributing to dropout, the training center can enhance the overall student experience. Students are more likely to persist in their studies when they feel supported and their specific needs are met.

Improved Reputation

A training center that demonstrates a commitment to student success and utilizes data-driven strategies to reduce dropouts can enhance its reputation. This can attract more students and potentially lead to increased enrollment.

Financial Savings

Reducing dropout rates can result in financial savings for the training center. Fewer dropouts mean more students complete their courses, potentially leading to increased revenue and cost savings associated with student recruitment and onboarding.

Data-Informed Decision Making

The analysis provides the training center with valuable data-driven insights. These insights can inform strategic decisions related to program development, marketing, and student support.

In summary, obtaining a detailed analysis of the features causing dropouts and taking them into account offers a host of benefits to a training center. It leads to improved student outcomes, enhanced operational efficiency, and a more positive reputation within the education community.

Ultimately, this approach positions the training center to better fulfill its mission of providing quality education and fostering student success.

How do you perceive the education system in Europe? Do you see many differences between countries? Do you think that training centres digitalisation will improve students' academic results?

The perception of the education system in Europe varies from country to country and is influenced by a range of factors including economic development, resources, and cultural context.

Europe is known for its diversity, and this extends to its education systems. Each country has its own approach to education, curriculum, and assessment methods. These differences can be influenced by historical, cultural, and economic factors.

The level of investment and resources allocated to education can vary significantly between European countries. Some nations may have well-funded and technologically advanced educational systems, while others may face resource constraints.

Here are some key points to address your questions:

Digitalization's Impact The digitalization of education has the potential to bring about several positive changes. It can lead to more flexible and accessible learning opportunities, personalized learning experiences, and improved engagement for students. Digital tools and data analytics can also help educators better understand student needs and adapt teaching methods accordingly.

Challenges and Opportunities: While digitalization offers opportunities for enhancing education, it also presents challenges. Not all students have equal access to digital resources, which can exacerbate inequalities. Additionally, the effective integration of technology into teaching requires training and support for educators.

Academic Results: The impact of digitalization on academic results is a topic of ongoing research and debate. While technology can support learning, its success depends on how it is implemented and integrated into the curriculum. When used strategically, it can contribute to improved academic outcomes.

In conclusion, the European education landscape is diverse, with variations between countries. Digitalization holds promise for improving education by providing tools for more personalized and effective learning. However, realizing these benefits requires addressing challenges related to access and ensuring that technology is used in ways that enhance the educational experience.

The ultimate impact on academic results will depend on how effectively these challenges are addressed.