TEAM 6 - KUVIZ: Anti-Cheat Tool for fair play in eSport

Case: Counter-Strike: Global Offensive

Ilia Zherebtsov
Engineering systems

Keyyapat Tiputhai
Energy system

Ivan Borisov
Data Science

Ngoc Bich Uyen Vo
Data Science

Valeria Abramova
Advanced Manufacturing Technologies

From "The Quick Failure" Friday to "The Final Cut" Friday:

Our Journey with the Technological Innovation Scheme

Our team embarked on an exciting journey as part of the Technological Innovation Scheme, where we brainstormed various innovative ideas ranging from a Chest X-Ray Classification Bot Chat to educational solutions for special needs children. After tough discussions and a rigorous analysis of each idea's potential, we collectively decided to focus our efforts on a practical solution, developing an Anti-Cheat Tool for fair play in the world of eSports, with a specific focus on Counter Strike: Global Offensive. Our choice was motivated by a pressing practical problem within the eSports industry - the alarming prevalence of cheats and hacks undermining fair play, competitive spirit and the industry's reputation. The eSports industry, with its multi-billion-dollar economic potential, demanded solutions to maintain its credibility and integrity, making anti-cheat tools imperative.

Week 2: "The Quick Failure" Friday

In our initial week, we concentrated on laying the foundation for our project. While our practical solution appeared promising, we faced a crucial technical challenge: designing a robust Anti-Cheat Tool capable of accurately detecting cheats in the complex environment of CS:GO. This required advanced AI technology and data analysis. In response to this technical problem, we embarked on a path of technical innovation. We identified our target end-users, conducted market analysis, collected valuable data from players' demos, and researched AI-based solutions to tackle cheating.

We had the opportunity to present our concept to Professor Andrey Somov, the head of the eSport lab at Skoltech. Professor Somov has conducted extensive research on professional

player behavior, emotions, and performance. His valuable insights affirmed the feasibility of our idea, emphasizing that it is indeed possible to analyze in-game behavior using in-game statistics from demos. This validation added a significant boost to our confidence in implementing our project.

The team dynamics during this week were characterized by hard work and dedication. However, we received the lowest grade in our cohort during the Quick Failure Friday evaluation, which taught us the importance of clarifying our idea and providing clear definitions for essential keywords. This setback revealed that individuals without prior experience in our field found it challenging to grasp our concept. Our decision to move into next week was driven by the need to improve and refine our project.

Week 3: “The Dry Run” Friday

As our project evolved, so did our technical challenges. The need for a more comprehensive model to detect cheating became evident, requiring further data collection and analysis. However, we began to develop a clearer understanding of the technical intricacies involved. With increased data and insights, we implemented the Tabnet neural network model, significantly boosting accuracy in detecting fair players and cheaters. Our commitment to meticulous market research and presentation refinement strengthened our project's technical foundation.

This week, our focus shifted towards engaging professional players. Their feedback was instrumental in shaping our product. We received highly positive responses from these experts in the field. Anton Vinogradov, the Head of eSport Products and CEO of DreamEaters, expressed keen interest in integrating our tool as an extension for his Game-R project. During this period, we also expanded the functionality of our tool to include the analysis of player in-game statistics and the identification of potential professional players. These enhancements garnered enthusiastic feedback from Aleksei 'RuFire' Burakov, a famous CS recruiter.

Determined to learn from our mistakes, we sought guidance from professors and mentors in the second week. Their insights helped us refine our presentation, analyze additional parameters to enhance our model, provide clearer and more scientific explanations of our idea, and gather feedback from industry professionals. The result was a successful performance during the Dry Run Friday presentation, igniting our motivation for the upcoming week.

Week 4: "The Final Cut" Friday

In our final week, we achieved a technical breakthrough with our Tabnet model, reaching a 100% accuracy rate in detecting fair players and 95% in identifying cheaters. We

also conducted more extensive market research and fine-tuned our presentation. We reached out to our primary end-users, eSport organizers. Their willingness to test our Anti-Cheat solution in December and consider potential partnerships represented a significant step forward for our project. Additionally, we received valuable feedback from the recruiter, who highlighted the substantial time savings our tool provides. According to him, our solution streamlines the process of analyzing potential professional players, saving more than 11 hours of his valuable time. These positive interactions and endorsements further solidified our commitment to progressing into the subsequent iterations of our project.

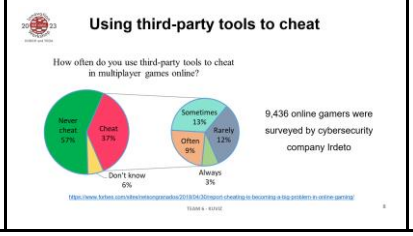
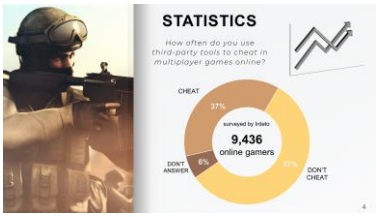
Additionally, it's worth noting that along the way, we had a remarkable experience that is a 2-hour journey to create our own website, diving into the process of crafting a captivating landing page with a "no-code" approach. In just a few short hours, we had our landing page up and running. You can view the result at this link: https://gvlubi01.wixsite.com/kuviz. Our efforts were well-received, and we stopped in the top-3 most beautiful websites in our cohort. The culmination of our efforts occurred on "The Final Cut" Friday, where our team showcased our project with unwavering enthusiasm. Our presentation became more engaging, bridging the gap between technical complexity and audience understanding.

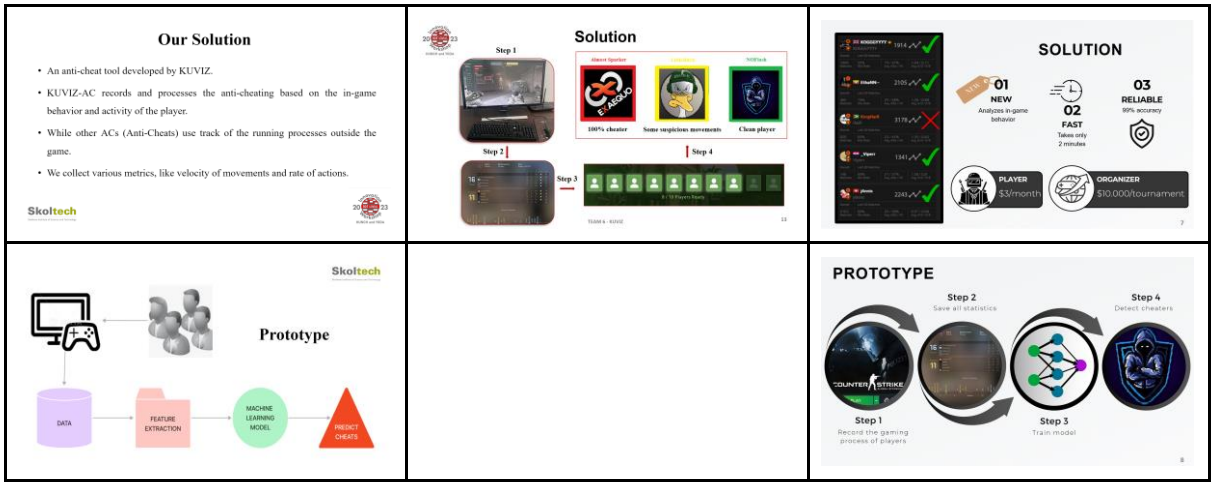
Lessons

Throughout this journey, we discovered that effective communication was key. To make our project accessible to a broader audience, we meticulously explained concepts such as what CS:GO is, the nuances of cheating in an online game, the detrimental effects of cheating, and the role of cheating tools in CS:GO. Even for emotionally charged topics like cheating, we learned the importance of supporting our statements with scientific papers and validation.

Our mentors provided invaluable tips and advice, prompting us to restructure our presentation slides, minimize text, and emphasize visuals such as infographics, pictures, and schemes to enhance engagement.

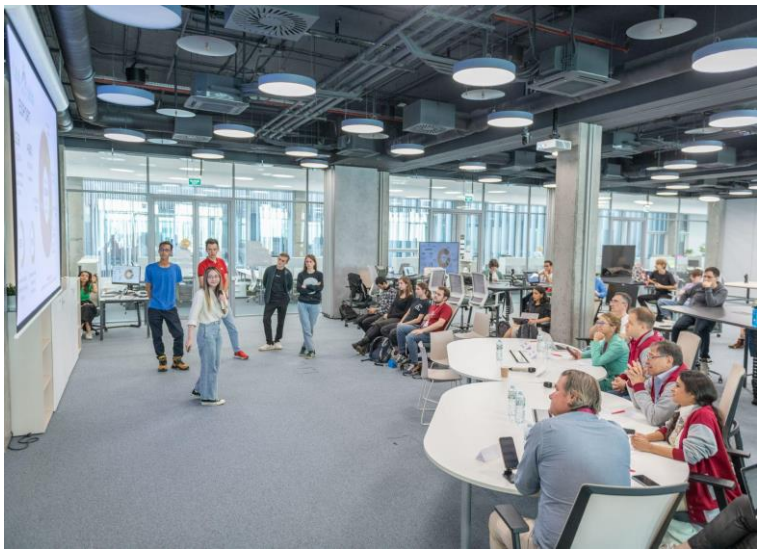
Some of the slides below show our presentation improvement:

Week 2	Week 3	Week 4
		



The attached photographs clearly show the increased level of audience interaction and excitement during the two presentations. It is clear that our efforts have resulted in a marked improvement, successfully capturing the attention and interest of our viewers.

Pic. 1: Our presentation in "The Quick Failure" Friday



Pic. 2: Our presentation in "The Final Failure" Friday

The Strategic Decision Ahead

As our project progressed, we faced a strategic decision: whether to enter new markets. This choice demanded careful consideration of factors like market size, competition, regulatory conditions, customer demand, and potential risks and rewards. We envisaged extending our anti-cheat tool to detect radar cheats and cheating in other games similar to CS:GO. The strategic insights gained from professors, mentors and the validation of our project's feasibility further support this decision. Entering new markets could unlock growth opportunities, increase revenue and profits, and diversify our business. However, it also entailed significant investments and risks. We needed more time to assess whether we possessed the necessary capabilities and resources for a successful market entry.

A Valuable Journey

As the innovation workshop concluded, we reflected on the wealth of experiences and guidance we gained. Our innovation idea and the bonds of friendship forged during IW2023 hold immense promise for the future. We aspire to bring our idea to life in the real world. Lastly, we express our heartfelt gratitude for the dedicated support and invaluable insights provided by our professors and mentors.