

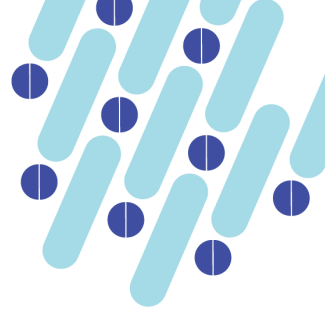
# R3.3 Analysis of results and training recommendations

## WORKPACKAGE 3



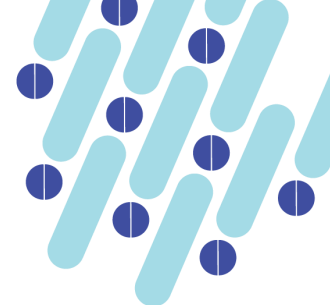
### Artificial Intelligence, Innovation & Society, the future of medicine – AIIS

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<b>Short Description</b>	This report presents the results of Task T3.5, T3.6 which focuses on the evaluation and teaching recommendations for the long-term replication of the training with students in the AIIS (Artificial Intelligence in Schools) program. The consortium diligently monitored all previous implementation tasks involving student training, ensuring close collaboration between teachers, companies' professionals, and students to assess their performance. Based on the conclusions drawn from the evaluation, the consortium partners undertook the crucial task of enhancing the AIIS learning programme. These improvements aim to address the identified areas of concern and optimize the training delivery for the final stages of the AIIS program.
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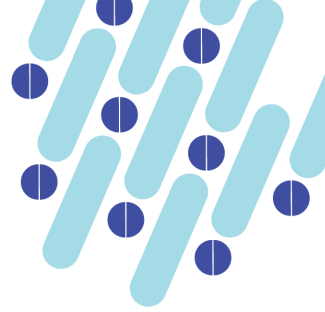
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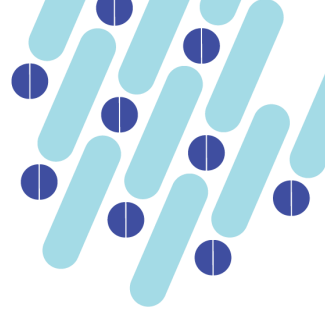
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## - Introduction

We are pleased to present this official report, encompassing the outcomes of the evaluation and follow-up of the AIIS (Artificial Intelligence Innovation & Society) program. This report constitutes a comprehensive examination of the program's effectiveness and long-term impact, as part of our commitment to ensuring excellence in educational initiatives.

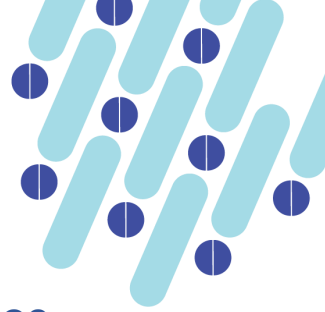
In this report, we delve into multiple crucial aspects essential to the success of the AIIS program. Our evaluation encompassed technical efficiency and perceived learning quality, personal satisfaction, self-improvement, and the integration of the program with participants' work/life experiences. The evaluation process involved continuous collaboration with educators, professionals, and students to gather insightful feedback through questionnaires and open-ended inquiries.

In contrast to the previous report R7.2, which extensively addressed the evaluation data of students and tutors, the primary focus of this report lies in the comprehensive assessment of the practical implementation of the pilot program. This endeavor aims to capture invaluable insights from consortium members, teachers, professionals and students, as they offer reflections on the effectiveness and impact of the AIIS program.

Leveraging the invaluable insights contributed by all partners throughout the implementation of the program, we diligently examined each step within the AIIS initiative, specifically focusing on tasks related to WP3. The primary objective was to identify potential areas for improvement and enhancement. Furthermore, our analysis was geared towards determining the program's adaptability across diverse educational contexts in various European regions, while duly considering country-specific differences and unique needs.

We wish to express our profound gratitude to all those who contributed to this evaluation process. The unwavering support and cooperation from educators, professionals, students, and institutions have been instrumental in gathering the necessary data to make informed decisions.

As you peruse this report, we hope that the findings and recommendations will serve as a foundation for the continual advancement of the AIIS program. Our shared vision is to empower the next generation with robust artificial intelligence education, fostering a future where knowledge and technology converge seamlessly to meet the evolving demands of the AI industry.



# 1 Information, establishment of activities, objectives, responsibilities and deadlines

In this section, we present the evaluation of the organization plan for the AIIS (Artificial Intelligence Innovation & Society) pilot program. The key aspects under evaluation include the establishment of activities, objectives, responsibilities, and deadlines within the program. This assessment aims to ensure a well-structured and effective implementation of the AIIS program.

*The organization plan within WP3 encompasses various essential components:*

- a) Student Profiles and Recruitment Plan: The plan includes a comprehensive understanding of student profiles, ensuring alignment between the program's objectives and the participants' backgrounds. The recruitment strategy outlines the process of engaging students with the necessary skills and interests to maximize the learning experience.
- b) Follow-up per Organization: The plan outlines a systematic approach for continuous follow-up with partner organizations. Regular communication and collaboration with consortium members, tutors, and professionals help maintain a cohesive and supportive environment for students' progress.
- c) Group Building: The organization plan provides insights into group formation strategies, ensuring that teams are composed of diverse skill sets and backgrounds, fostering a collaborative and innovative learning environment.
- d) Challenge Follow-up Plan per Week: This plan addresses the regular evaluation and feedback mechanism for the challenges presented to the students. It ensures that students' progress is continuously monitored, and timely support is provided as needed.

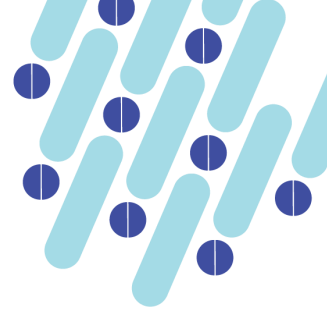
## Tasks and Roles:

The organization plan clearly outlines the responsibilities and roles of partners, including:

- a) Platform Coordinator: Responsible for overseeing the overall platform management, ensuring seamless technical operations, and addressing any platform-related challenges (TUAS).
- b) Tutors: Tasked with guiding and mentoring students throughout the program, providing support, and delivering the curriculum effectively (one tutor per university).
- c) Communication Team: Facilitates communication among consortium members, tutors, and students, ensuring smooth information flow and prompt responses to queries.

## Structured Calendar and Deadlines:

The original timeline was set to begin implementation in September 2022 and conclude by January 2023. However, due to unforeseen technical challenges related to the platform and the need for seamless support, the final event had to be rescheduled to



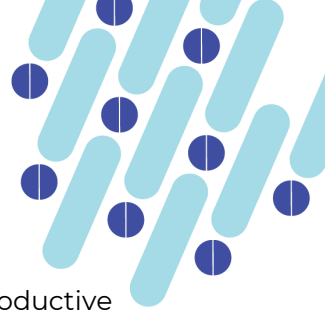
December 22, resulting in a shorter overall duration than initially anticipated. Nonetheless, it's important to note that the platform was kept open for students until January, allowing them additional time for any remaining activities. This adjustment was made to accommodate technical challenges while ensuring that students had the opportunity to complete the program successfully. The organization had a well-structured calendar in place, outlining the program's timeline, essential milestones, deliverables, and deadlines. This strategic timeline facilitated efficient planning and ensured tasks were accomplished within the defined timeframes, effectively addressing the of the pilot program.

### **Suggested Improvements:**

In this report, our attention is directed towards delineating specific areas for improvement identified by the consortium. These insights primarily emanate from the direct feedback provided by tutors at the partner universities. It is noteworthy that a comprehensive evaluation, encompassing external assessments, student evaluations, and mentor assessments, is covered in a separate report, denoted as R 7.2, and pertains specifically to the quality work package.

During the internal evaluation process, some areas for improvement have been identified:

- *Anticipation of Evaluation Criteria:*  
We acknowledge that the evaluation criteria of challenges were primarily based on group work, not individual contributions, and that the theoretical aspects were emphasized in this process. In retrospect, it becomes evident that we should have anticipated and incorporated a more comprehensive set of criteria that encompassed both individual and group performances. By focusing predominantly on group work and theoretical aspects, the evaluation of challenges may not have fully captured the nuanced individual efforts and contributions within the project. This limitation might have led to an incomplete assessment of the participants' true capabilities and hindered our ability to identify areas for improvement at both individual and collective levels. Moving forward, we recognize the importance of developing evaluation criteria that holistically assess both group dynamics and individual performances. Future evaluations should be more inclusive, considering factors such as individual expertise, problem-solving skills, and critical thinking abilities, in addition to group collaboration and theoretical knowledge. Learning from this experience, we will actively work on enhancing our evaluation approach to ensure a more balanced and accurate assessment. By doing so, we can better understand the strengths and weaknesses of each participant, leading to a more effective and targeted improvement plan.
- *Detailed Action Map with Defined Responsibilities:*  
Although we have a calendar and plan, a more detailed action map, accompanied by clearly defined responsibilities, specifying the partners or individuals involved in each step, is a crucial aspect of effective project management and successful program implementation. By having this level of clarity and transparency, the risk of misunderstandings and miscommunication is significantly reduced. It helps prevent duplication of efforts and ensures that resources are utilized efficiently. Each team member understands their role in



contributing to the project's success, leading to a more motivated and productive team.

The evaluation of Work Package 3 highlights the importance of a well-structured organization plan for the successful implementation of the AIIS program. By addressing the suggested improvements, we aim to further optimize the program's effectiveness, ensuring that it aligns seamlessly with the overall objectives of the AIIS initiative.

## 2 Implementation of the individual online learning programme

Goal: Encouraging Student Participation and Increasing Program Awareness

### 2.1 Launching AIIS in Universities

The objective of the implementation phase of the individual online learning programme was to foster increased student participation by raising awareness of the AIIS (Artificial Intelligence Innovation & Society) program.

To achieve this, specific communication materials were created, including tailored email templates, a registration form, and visually engaging content like images, videos, social media posts, and invitations.

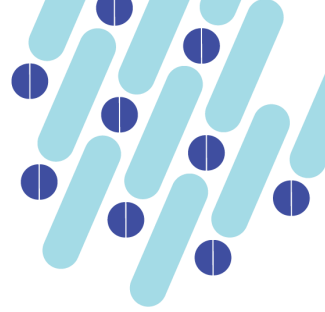
#### *Actual Implementation:*

The implementation phase involved the application of the launch plan across all partner universities. We provided partners with a Communication Material Folder that includes specific email templates, a registration form, visual content such as images, videos, and social media posts, as well as invitations. While we have shared and explained this material with our partners. Each institution conducted recruitment activities based on their unique situations and contexts. The primary focus was to attract potential participants and promote the benefits of the AIIS program effectively.

#### **Suggested Improvements:**

1. *Improved accessibility and utilization of communication material folder:*  
To enhance the reach and effectiveness of the communication materials, it is recommended to improve the accessibility and utilization of the communication material folder, this can be achieved by establishing a dedicated task that includes a direct link to the folder. Ensuring that all partners have easy access to the latest and most relevant communication materials will streamline the dissemination process and foster consistent messaging across universities.





2. Conduct AIIS presentations for students:  
In addition to communication materials, conducting AIIS presentations for students could prove highly beneficial. These presentations can offer a more personal and interactive approach, allowing potential participants to ask questions and gain a deeper understanding of the program's benefits and offerings.
3. Sharing good practices in recruitment between partners:  
Facilitating a collaborative platform for partners to share successful recruitment practices can be immensely valuable. By exchanging experiences and insights before the recruitment period concludes, partners can learn from each other's successes and implement effective strategies, ultimately enhancing student registration numbers.
4. Prepare better explanation in launching about expected time and commitment:  
To further enhance student engagement and preparedness, it is crucial to provide a comprehensive explanation during the program launching regarding the expected time commitment for the course. This includes transparently communicating the approximate time students will need to dedicate to the program each week, the nature of commitments expected, and the level of effort required to successfully complete the challenges and coursework. Offering a clear understanding of the course's time demands will enable students to make informed decisions and plan their schedules effectively, fostering a more focused and dedicated learning experience.

## 2.2 Students enrollment

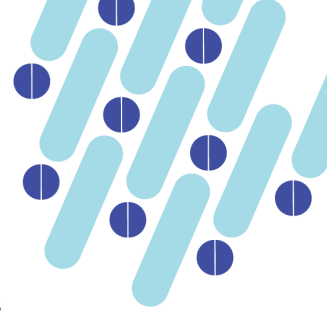
The initial objective was reaching a minimum of 100 registered students with 50 successful course completions.

During the implementation of the individual online learning programme, the main objective was to achieve a minimum of 100 student registrations and ensure that at least 50 students successfully completed the course. The enrolment process garnered substantial interest and engagement from potential participants. (It's worth noting that the course was made available as an elective at USAL, TURKU, and UTU universities, with students having the opportunity to earn 3 ECTS credits upon successful completion. At UMONS, the course was seamlessly integrated into the curriculum, also with 3 ECTS credits available, while at UTH, it remained a voluntary option without credit allocation.)

### Actual Outcome:

The programme witnessed an overwhelming response, with 310 students expressing initial interest in joining the AIIS program. Out of this initial interest pool, 181 students actively used their access to the AIIS Collaborative Learning Interface and 125 students further engaged with the materials. Ultimately, 145 students formally enrolled in the AIIS challenges, indicating their commitment to the learning experience and 93 students finished the challenges.

The successful course completion figures (Table 1, Figure 1 ) were equally promising. Among the enrolled students. Their achievements varied as follows:



- ✓ 85 students successfully completed both AI and soft skills and challenges
- ✓ 7 students successfully completed both AI and soft skills components of the course,
- ✓ 2 students completed only the AI component,
- ✓ 3 student completed both AI and challenges,
- ✓ 1 student completed soft skills and challenges,
- ✓ 5 students completed only the challenges.

As a result, the AIIIS program surpassed its objective, with a total of 101 students successfully finishing the course in various capacities. The overall completion ratio for the active students who completed the course is 80.8%.

Upon analysis, it was observed that completion ratios varied considerably among different universities, correlating with the nature of the courses offered. Notably, the University of Mons (UMONS) achieved the highest completion percentage at an impressive 97%. This outcome was attributed to the course's integration into the 3rd year medical school curriculum at UMONS.

Conversely, the University of Thessaly (UTH) exhibited a distinct pattern, recording the lowest completion rate. This was attributed to the optional status of the course at UTH, without any credit weightage. This disparity in completion percentages between UMONS and UTH highlighted the impact of course placement and recognition on student engagement and dedication

Table 1: Student AIIIS course participation and completion distribution among universities

Online courses	USAL	UTH	UTU	UMONS	TUAS	TOTAL
<b>Initial INTEREST</b> <i>The number of students expressing their interest in participating in the course.</i>	174	75	11	33	17	<b>310</b>
<b>NUMBER OF ACTIVE</b> <i>Considered active after completing at least one task (excluding the tutorial).</i>	67	16	3	32	7	<b>125</b>
105 MCs <i>Successfully accomplished all tasks</i>	39	6	2	31	5	83
95 - 104 MCs <i>Attained completion status after fulfilling enough MCs equivalent to 47.5 hours of work</i>	6	2	0	0	1	9
Additional certificates <i>Successfully completed all components of the AI or Soft skills part</i>	2	2	0	0	0	4
Only Challenges <i>Successfully completed the challenges but less than 95 MCs</i>	4	1	0	0	0	5
<b>TOTAL FINISH Online</b>	51	11	2	31	6	<b>101</b>
<b>Completion ratio:</b>	76%	69%	67%	97%	86%	<b>80,8 %</b>
<b>CHALLENGES</b>						
Enrolled in Challenges	80	17	5	33	10	<b>145</b>
<b>TOTAL FINISH challenges</b>	48	8	2	29	6	<b>9</b>

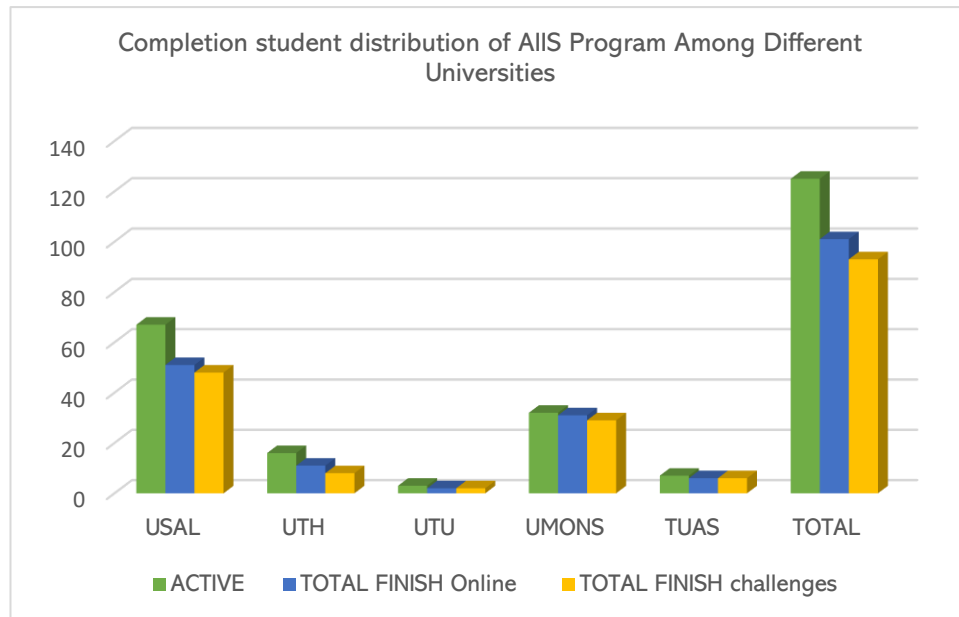
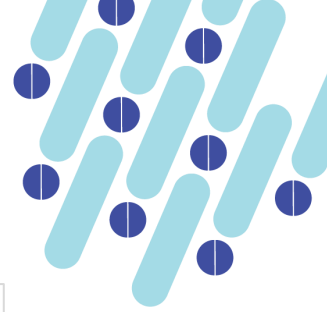
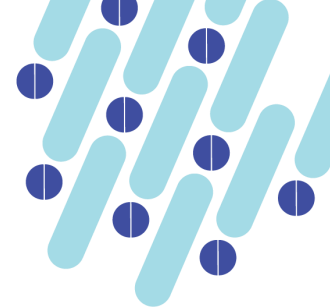


Figure 1: the figure provides valuable information about student participation and completion in an AIIS course across different universities.

### **Suggested Improvements:**

1. **Registration Process:** To enhance the registration process and improve communication with students, it is recommended to implement automatic confirmation messages upon registration. This measure would help avoid any potential issues with double registrations and provide students with immediate acknowledgment of their enrolment.
2. **Student Identification and Reporting:** Instead of solely identifying students by their email addresses, it is advisable to include their names and universities. This practice would facilitate a more comprehensive and efficient reporting process, particularly while generating weekly activity reports from the AIIS Collaborative Learning interface.
3. **Official University Email:** To maintain professionalism and credibility, registration emails should be sent from official university email addresses. This approach would instill confidence in the students and ensure that the communication is recognized as genuine and legitimate.
4. **Automatic token generation:** Give students, or alternatively, university tutors, the option to automatically generate a token to expedite issue resolution in cases where their token is not functioning correctly.
5. **Managing Dropout Cases:** To gain insights into student attrition and address issues effectively, a form indicating the reasons for dropping out should be implemented. Understanding the underlying factors for dropout would enable the program to develop targeted interventions and support mechanisms.



6. Prepare clear explanation in launching about expected time and commitment:  
 To further enhance student engagement and preparedness, it is crucial to provide a comprehensive explanation during the program launching regarding the expected time commitment for the course. This includes transparently communicating the approximate time students will need to dedicate to the program each week, the nature of commitments expected, and the level of effort required to successfully complete the challenges and coursework. Offering a clear understanding of the course's time demands will enable students to make informed decisions and plan their schedules effectively, fostering a more focused and dedicated learning experience.

Conclusion:

The student enrolment and completion outcomes have been commendable, reflecting the strong interest and dedication of participants in the AIIS program. By considering the suggested improvements, the registration and overall student management processes can be further refined to optimize student engagement and improve course completion rates. The successful implementation of these improvements will contribute to the continuous growth and success of the AIIS program in preparing students for a future in the field of artificial intelligence.

### 2.3 Students desired profile

Initially, the objective was to maintain an inclusive approach where no selection would be made to limit the number of participants. The program aimed to welcome all interested students, with a specific focus on those pursuing medicine across the four universities involved in the project. Additionally, the online training's second axis was made available to students from TUAS (Turku University of Applied Sciences) specializing in Intelligent Automation (IA). For these students, the first axis was optional, as they already possessed higher skills in the AI field.

Actual Outcome:

During the piloting program, the preferred target group was initially identified as students in their 3rd year of medicine, based on a survey conducted among consortium members. However, it's important to note that enrollment was not limited exclusively to this particular year of study, as students from other academic levels were also encouraged to participate in some universities (Figure 2, Table 2).

Table 2: Distribution of initial student interest across the universities.

	1 <sup>st</sup> yr	2 <sup>nd</sup> yr	3 <sup>rd</sup> yr	4 <sup>th</sup> yr	5 <sup>th</sup> yr	6 <sup>th</sup> yr	PhD	other	Total
USAL	36	19	29	39	17	29	4	1	174
UTU			11						11
UMONS		1	29				1	1	33
UTH	27	4	4	8	18	11	3		75
TUAS		5	9	3					17
<b>TOTAL</b>	<b>63</b>	<b>29</b>	<b>82</b>	<b>50</b>	<b>35</b>	<b>40</b>	<b>8</b>	<b>2</b>	<b>310</b>

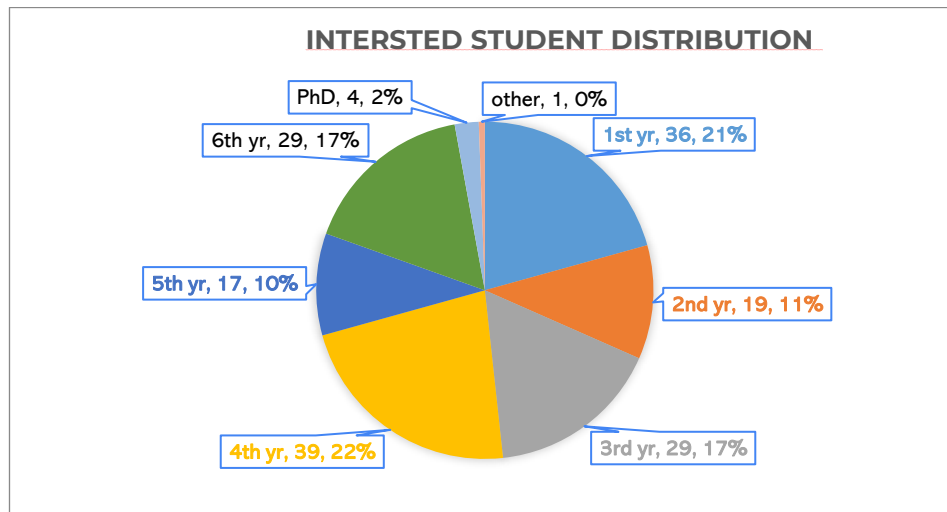
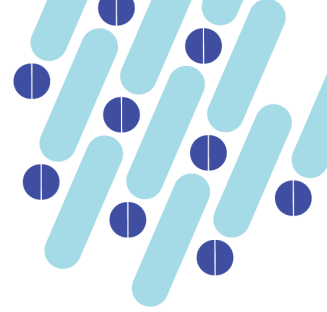


Figure 2: Analyzing course interest: distribution by medical school year

While the program was primarily designed for medical students, it's important to highlight that there was substantial interest from students in other faculties and various disciplines within medical faculties. This included students from fields like pharmacy, biomedical studies, and nursing, who expressed a keen interest in participating in the program. Our initial aim was to focus on medical students; as a result, the pilot phase was tailored to their needs. In the future, we will consider expanding the program to include these other healthcare studies.

There were no prerequisite study levels or requirements for successful previous credits, such as statistics. All interested students, regardless of their academic background, were encouraged to participate in the program.

The piloting program's materials were available in five languages, facilitating accessibility for a diverse range of participants. It's worth noting that these materials were actively shared among students, enabling a collaborative learning environment.

For group work and challenges, English served as the designated communication language. It was preferable for enrolled students to possess an English proficiency level of an independent user (B1/B2). However, this language proficiency expectation was left to the discretion of each university, and no formal language assessment test was planned.

By adopting an inclusive approach to student selection and language requirements, the piloting program aimed to foster a diverse and enriching learning environment for all participants, ensuring equitable access to valuable knowledge and experiences in the field of medicine and artificial intelligence.

**Suggested Improvements:**

1. Open Enrollment for All Medicine Years with ECTs Compensation:  
Consider extending enrollment to students from all medicine years, with the condition that students have sufficient ECTs to compensate for the work hours



required by the course. It is essential to note that due to the varying conditions in the universities in this pilot period (voluntary course with or without credits), comparing completion rates among different medicine years may not provide a clear measure of which year has a higher completion rate.

2. Explore Opening the Course to Other Specialties:

Consider the possibility of expanding the course's scope to include students from other healthcare-related specialties, such as pharmacy, biomedicine, nursing, and more. Including participants from various disciplines will enrich the learning experience and promote interdisciplinary approaches to AI in healthcare.

3. Enhance Language Accessibility:

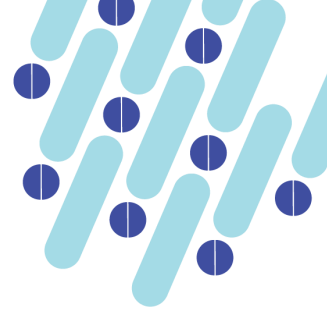
While the student material was available in five languages, ensure greater accessibility by adding subtitle options to the AIIS Collaborative Learning Interface. This enhancement will facilitate comprehension and engagement for students who may have varying levels of English proficiency.

By implementing these improvements, the AIIS program can create a more inclusive, diverse, and accessible learning environment, fostering collaboration and promoting the application of AI in various healthcare disciplines.

## 2.4 follow-up learning program

During the implementation of the learning program, each university had a dedicated tutor responsible for communication and serving as the contact person representing AIIS. These tutors played a crucial role in maintaining a direct line of communication with the students and addressing any queries or concerns they had. Weekly meetings for university tutors further facilitated coordination, knowledge sharing, and the exchange of best practices. In addition, several effective strategies were employed to ensure continuous engagement and support for the students. The actual approach involved the following key elements:

1. **Weekly activity reports and credit tracking:**  
Regular weekly reports were generated by TUAS (Figure 3) to monitor and track students' activity and Micro-credentials (MCs) earned on the AIIS Collaborative Learning Interface. This data provided valuable insights into individual progress and engagement levels.
2. **Personalized action plans:**  
Weekly meetings were conducted between university tutors to analyze the activity reports and develop personalized action plans for each situation. These plans aimed to address individual learning needs, strengths, and areas for improvement.
3. **Mailchimp for Immediate Follow-Up and Personalized Motivational Messaging:**  
to maintain consistent communication with the students, Mailchimp was utilized for immediate follow-up. This powerful communication platform allowed for timely updates, reminders, and personalized motivational messages to keep the students engaged and on track. For students who successfully completed the



course and earned their Micro-credentials (MCs), heartfelt congratulatory messages were sent to celebrate their achievements and acknowledge their dedication. Motivation continued for students who were close to finishing their MCs, with messages like "You're Almost There! Keep Pushing Forward!" And for those who still had progress to make, encouraging messages were delivered, reminding them, "You Can Do It! Keep Going Strong!".

4. Close Communication and Issue Resolution:

A strong focus was placed on close communication with the students. Any issues or challenges that arose were promptly addressed to ensure a supportive learning environment and to prevent any hindrances to the students' progress.

By adopting these measures, the follow-up learning program successfully fostered a proactive and responsive approach to student engagement and support. The combination of regular progress tracking, personalized action plans, and close communication contributed to an enriched learning experience and facilitated students' continuous development and success.

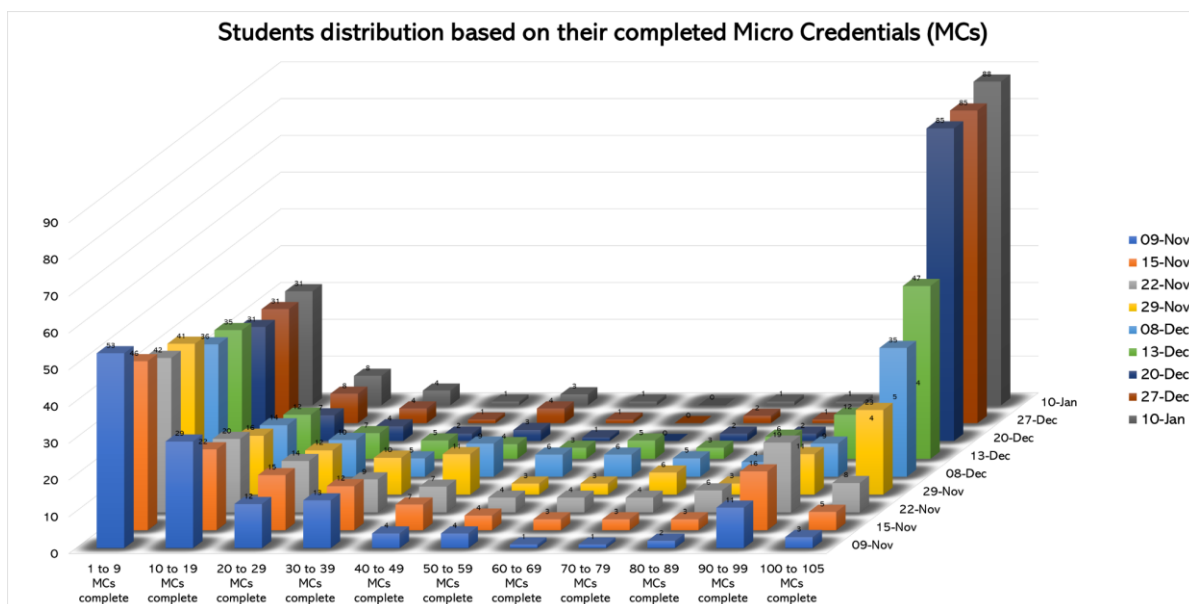
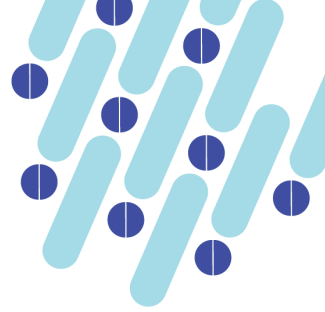


Figure 3: The figure displays the distribution of students based on their completed Micro Credentials (MCs) on a weekly basis throughout the course. Students' progress is categorized by number of MCs. The graph aims to track the engagement and performance of students over time and employs motivational messaging to support and encourage those with low MCs to improve their progress. The use of motivational messages helps to foster continuous development and positive learning outcomes for all students participating in the course.

**Improvements for the Follow-Up Learning Program:**

1. Enhance Email Delivery:

Address the issue of Mailchimp emails being marked as spam, which hindered communication with some students. Implement measures to improve email delivery rates and ensure that important communication reaches all students without interruptions.



2. *Cumulative Weekly Reports:*  
Develop a cumulative weekly report per student that provides an overview of their progress and activity throughout the program. This report should also include insights into the effectiveness of MailChimp as a communication tool, helping to evaluate its impact on student engagement.
3. *Enhance AIIS Collaborative Learning Interface Functionalities:*  
Work on developing new functionalities in the platform that grant more autonomy to tutors and mentors in monitoring students' progress. These enhanced features will allow educators to provide personalized guidance and support to individual students.
4. *Dedicated technical support:*  
We suggest appointing a dedicated technical support specialist for prompt incident resolution, especially during the critical first week of the course launch. While we did have a designated contact person for technical issues, their other responsibilities and the exceptionally high demand, given the novel nature of the metaverse pilot program, presented challenges. Introducing a single point of contact will expedite responses and enhance technical issue resolution, ensuring a smoother learning experience for students.
5. *Proactive Communication on Server Maintenance:*  
To minimize disruption, proactively communicate any scheduled server maintenance or technical updates to students in advance. Transparent communication will keep students informed and help them plan their study time accordingly.

By implementing these improvements, the follow-up learning program can overcome existing challenges and create a more efficient, reliable, and supportive learning environment for all participants.

### **Suggestions for program improvement:**

- ✓ Open Meetup for Program Introduction: Consider starting the program with an open meetup session to present the program, tools, and answer any questions from students. This initial interaction will create a welcoming atmosphere and allow students to gain a clear understanding of the program's objectives and structure.
- ✓ Biweekly or Weekly Open Discussion Sessions: Organize regular biweekly or weekly open discussion sessions with students. These sessions will provide a platform for students to express their thoughts, share insights, and engage in meaningful conversations about the course content and learning experiences.
- ✓ Shared Program Calendar: Implement a shared calendar for the program that includes all activities, deadlines, and links to meetings. This centralized calendar will help students stay informed about upcoming events and allow easy access to virtual meeting links.





- ✓ In-Platform Meeting Rooms: Explore the possibility of incorporating meeting rooms within the learning interface. This feature will enable seamless virtual meetings between students and instructors, fostering a more interactive and collaborative learning environment.
- ✓ Pre and Post-Program Questionnaires: Implement pre-program and post-program questionnaires to assess students' knowledge levels about AI and SS. By comparing responses from the beginning and end of the program, the impact and effectiveness of the course on students' understanding can be evaluated.
- ✓ Platform Chat and Contact Support: Introduce a chat feature within the platform to facilitate real-time communication among students and instructors. Additionally, provide contact information for technical support and mentors, ensuring prompt assistance for any issues or inquiries.
- ✓ Weekly Forum Discussions: Encourage weekly forum discussions on specific topics or challenges related to the course. This interactive forum will promote active participation, peer learning, and knowledge exchange among students.
- ✓ Open Q&A Section on the Platform: Create an open Q&A section on the platform, accessible to all students, where they can post questions and receive answers from instructors and peers. This feature will encourage continuous learning, foster collaboration, and provide a supportive environment for clarifying doubts and exchanging ideas.

By incorporating these suggestions, the program can enhance engagement, communication, and assessment mechanisms, ultimately providing a more enriched and effective learning experience for all participants.

## 3 Definition of collaborative framework and challenges

### 3.1 Challenge creation

The challenge phase was a pivotal component of the program. It offered students the opportunity to engage with real-world data and address complex AI problems in the context of healthcare. The challenges also required the students to collaborate effectively in groups, thereby highlighting the significance of soft skills in the workplace. A total of 10 challenges were thoughtfully designed, each centered around authentic datasets sourced from real healthcare scenarios.

For each challenge, the students were provided with real-world datasets and carefully crafted questions that required them to apply their AI knowledge and analytical skills. These challenges not only tested their technical proficiency but also encouraged them to explore the ethical implications and potential impact of AI in real medical settings. In addition to technical proficiency, students needed to harness effective communication, active listening, and teamwork to navigate group dynamics successfully. The challenges presented opportunities for students to engage in constructive discussions, negotiate differing perspectives, and arrive at data-driven solutions.



Originally, the plan was to leverage the open platform [H2O](#) for hosting the challenges. However, due to a policy change, H2O became limited to a 30-day trial. In response to this shift, the team promptly adapted and explored alternative ML platforms, such as Neural Designer. Detailed instructions were provided for each platform, ensuring that students could effectively utilize the tools to tackle the challenges.

The use of real data in the challenges offered students a unique opportunity to work with authentic healthcare scenarios, preparing them to face real-world complexities and uncertainties. Engaging with real data enhanced their problem-solving abilities, encouraged critical thinking, and deepened their understanding of AI applications in healthcare.

The integration of soft skills into the challenge phase further reinforced the program's commitment to nurturing well-rounded medical professionals who are not only adept in their medical knowledge but also excel in fostering a culture of collaboration, empathy, and ethical AI application in the medical field.

Throughout the Challenge phase, students not only honed their technical skills but also developed a deeper appreciation for the profound impact AI can have on patient care, diagnostics, and treatment decision-making. Additionally, they had the opportunity to cultivate the essential soft skills necessary for effective teamwork and collaboration in the healthcare context.

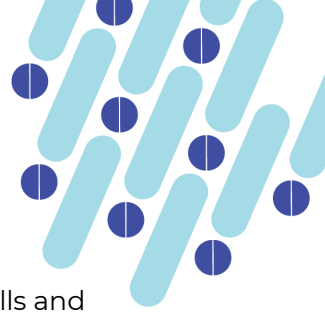
*Suggested improvements:*

- To address the confusion with multiple platforms, it is essential to provide comprehensive guidelines for all platforms used in the program. While a guideline for H2O was available to the students in advance, other platforms relied on mentor explanations, leading to inconsistencies in understanding.
- By creating clear and detailed guidelines for multiple platforms (such as Neural Designer) students will have a standardized and accessible reference to navigate and utilize the different tools effectively. Multiple platform options will allow students to choose the platform most suited to them. These guidelines should include step-by-step instructions, tips, and best practices to ensure a seamless learning experience across all platforms.
- The provision of comprehensive guidelines will serve as a valuable resource, enhancing the students' overall learning experience and enabling them to excel in their AI-driven healthcare journey.

## 3.2 Challenge Monitoring:

The Challenge Monitoring phase was a critical component of the program, ensuring effective support and guidance for student groups undertaking challenges. To optimize the learning experience, each group was assigned dedicated AI and SS mentors who played essential roles in guiding and empowering the students.

The selection of mentors was a collaborative effort, with the partners taking an active role in identifying individuals with relevant expertise and practical experience. This



comprehensive approach ensured that the mentors possessed the necessary skills and knowledge to mentor the students effectively.

During the Challenge Monitoring phase, the WP3 coordinators took a proactive approach and assigned mentors from Xebia, to the mentors themselves. This thoughtful decision ensured that the mentors received the necessary support and guidance, enabling them to effectively fulfill their roles in guiding the student groups.

To create a well-structured and cohesive learning environment, the roles of mentors and the recommendations for group meetings and work formats were clearly defined. The mentors were tasked with offering expert insights, providing technical guidance, and fostering the development of soft skills in the student groups. Detailed guidelines for group meetings and work formats were established to optimize collaboration and learning outcomes.

Throughout the challenge monitoring phase, weekly meetings were scheduled for tutors to interact with the mentors, facilitating regular follow-up on the progress of the student groups. These meetings served as valuable opportunities to address challenges, provide additional support, and ensure that the student groups remained on track to achieve their objectives.

### **Suggested improvements:**

To enhance the challenge monitoring phase, the following improvements are recommended:

1. **Specify Mentor Profiles and Emphasize Expertise:**  
A thorough and transparent process should be implemented to specify mentor profiles. Each mentor's background, qualifications, and expertise in the relevant fields, whether AI or soft skills, should be clearly outlined. This will ensure that the mentors possess the necessary knowledge and experience to effectively guide and support the student groups throughout the program.
2. **Targeted Mentor Training and Enhanced Independence:**  
In addition to specifying mentor profiles, it is essential to recognize the necessity of offering targeted training to mentors. This training should focus on enhancing their independence to enable them to utilize the platform more effectively. By equipping mentors with the skills needed to navigate and leverage the platform, they can better support and guide students.
3. **Augmentation of Platform Functionalities for Educator Empowerment:**  
Consideration should be given to expanding the functionalities within the platform to further empower educators, including mentors. These augmented functionalities will not only streamline mentorship but also enhance the overall experience for both mentors and students. They can include tools and resources that make mentor-student interactions more efficient and productive.
4. **Ensuring Mentor Commitment and Competency in the Program:**  
One critical aspect is to confirm the commitment and competence of mentors in the program. The selection of mentors should prioritize their eagerness to actively engage with student groups, delivering consistent support, guidance, and



utilizing their expertise. An explicit understanding of the time and effort expected from mentors will significantly enhance the quality of the students' learning experience."

5. Regular Mentor Feedback and Assessment:

Implementing a feedback mechanism that allows students to provide input on their mentor's performance can be valuable. This feedback will enable mentors to understand the areas in which they excel and identify opportunities for improvement. Regular assessments of mentor effectiveness will aid in maintaining a high standard of mentorship throughout the program.

By addressing these improvement areas, the challenge monitoring phase can be strengthened, leading to a more enriched learning experience for the student groups. Clear mentor profiles and dedicated mentors, coupled with ongoing training and feedback, will contribute to the overall success and impact of the program.

### 3.3 Creation of Students Cross-Sector and Transnational Teams:

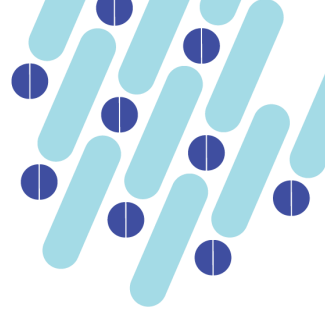
The process of forming cross-sector and transnational teams for the AIIS program involved students selecting their challenges through the AIIS Collaborative Interface. Initially, the plan was to have 10 medical students and one technical student from TUAS (Turku University of Applied Sciences) in each group. However, due to the high number of student submissions (145 students) and the limited availability of challenges (only 10 challenges were available), the groups exceeded the initial limit of 10 students and had to be divided into two separate groups. A total of 93 students were actively engaged and successfully completed the challenges (Table 3).

Table 3 : Breakdown of Challenge groups by University.

<b>Challenge Name</b>	<b>University</b>					<b>Total</b>
	TUAS	UMONS	USAL	UTH	UTU	
Breast Cancer	0	5	7	0	0	<b>12</b>
Diabetes	0	1	2	0	1	<b>4</b>
Fetal Health	0	3	5	0	0	<b>8</b>
Framingham Heart Study	1	0	6	2	0	<b>9</b>
Heart Attack Risk Analysis	1	1	8	0	1	<b>11</b>
Heart Failure	0	0	7	2	0	<b>9</b>
Hepatitis C	1	1	8	1	0	<b>11</b>
Mania	1	8	2	1	0	<b>12</b>
Maternal Health Risk	1	9	1	1	0	<b>12</b>
Stroke	1	1	2	1	0	<b>5</b>
<b>Total</b>	<b>6</b>	<b>29</b>	<b>48</b>	<b>8</b>	<b>2</b>	<b>93</b>

**Suggested improvements:**

To enhance the formation of cross-sector and transnational teams in the future, the following improvements are recommended:



1. *Define Optimal Number of Students per University per Challenge:*  
It is essential to determine the ideal number of students from each university participating in a specific challenge. This approach will ensure diversity in the teams and provide an opportunity for students from different institutions to collaborate effectively.
2. *Limit Group Size to 5-6 Students:*  
Based on valuable feedback received from students, it is recommended to limit the maximum group size to about 5-6 students. This size would enable more effective communication, collaboration, and engagement within the groups. Smaller teams can enhance the sharing of ideas and foster a deeper understanding of the challenges at hand.
3. *Preparation for Potential Overlapping Interests:*  
Anticipating a higher number of student submissions and interests in specific challenges, it is prudent to have contingency plans in place. This may involve having additional challenges ready or adapting the existing challenges to accommodate a larger number of students without compromising the quality of the learning experience.

By implementing these improvements, the program can optimize the formation of cross-sector and transnational teams, creating an inclusive and effective learning environment. Defining the optimal number of students per university per challenge and maintaining manageable group sizes will enhance the students' collaboration and maximize their learning outcomes.

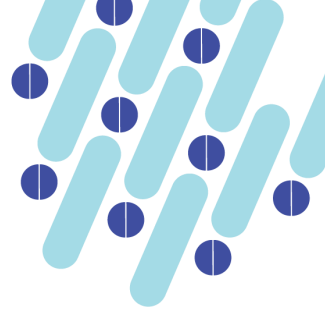
### 3.4 Implementation of Challenges:

During the implementation of the challenges, students and mentors were provided access to a Google Drive containing all the relevant information and resources necessary for the successful completion of the tasks. Weekly meetings were organized between mentors and students, facilitated through a doodle form to ensure convenient scheduling for all parties involved. Additionally, a weekly SWOT analysis was conducted by the student teams, assessing the development of their soft skills, which was then reviewed and supported by the mentors.

#### Issues:

Several challenges were encountered during the implementation of the challenges:

1. **Large Number of Students:**  
The high number of students participating in the challenges posed challenges in managing the groups, necessitating the splitting of groups to maintain manageable sizes.
2. **Dropout Students:**  
The dropout of students affected the progress of group work and required reorganization and reallocation of tasks.
3. **Absence in Weekly Meetings:**  
Some students faced conflicts with their schedules, leading to their absence in the weekly meetings, hindering effective communication.



### **Suggested improvements:**

To address these issues and enhance the implementation of challenges, the following improvements are suggested:

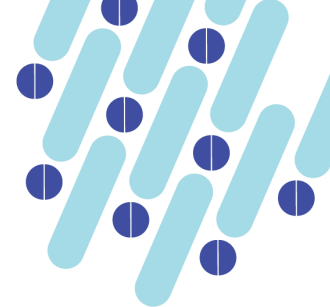
1. Enhanced Mentor Access to Student Data:  
To further support and personalize their guidance, mentors should have improved access to student data, including tools like student dropout lists or completed tasks by their students, enabling them to address any specific challenges their mentees may encounter more effectively.
2. Advance Scheduling of Weekly Meetings:  
Instead of assigning weekly meetings on a weekly basis, it is advisable to define the meeting schedule for the entire six-week duration in advance. This will allow students to plan their time effectively and ensure their availability for the meetings.
3. Advance Communication of Meeting Details:  
During the registration process, students should be informed about the schedule of weekly meetings and their expected duration. This will ensure that students are well-prepared and committed to attending the meetings regularly.
4. Mandatory Presence in the Initial Meeting:  
Attendance in the first meeting should be made mandatory for all students. This meeting will set the foundation for effective collaboration, introduce the challenges, and allow students to get to know each other, fostering a sense of unity within the groups..

### **Recommendations:**

Based on the challenges faced, the following recommendations are made:

1. **Start Challenges After AI Module Completion:**  
Initiating the challenges after the completion of the AI module will provide students with a stronger foundation and preparation for the tasks.
2. **Support Communication via MailChimp:**  
Tutors should support communication via MailChimp to ensure effective dissemination of information to all participants.
3. **Utilize Social Media Platforms:**  
Consider using social media platforms like Facebook to facilitate direct communication between students and their mentors, fostering a dynamic and accessible communication channel.
4. **Reduced Number of Students per Group:**  
Reducing the number of students per group will allow for more focused mentor-student interactions, enhancing the quality of support and mentorship.

By implementing these improvements and recommendations, the challenges' implementation can be further optimized, promoting effective collaboration, mentorship, and student success.



### 3.5 Monitoring of Students' Collaborative Work:

During the implementation of the AIS program, the monitoring of students' collaborative work played a crucial role in ensuring the effectiveness of the learning process and the overall success of the challenges. The monitoring process involved several key aspects:

- ✓ **Weekly Activity Report from Mentors:**  
Mentors provided weekly activity reports, offering evidence of meetings held with their respective student groups and recording the students' presence and engagement in these meetings.
- ✓ **Weekly SWOT Analysis for Students:**  
Students conducted weekly SWOT (Strengths, Weaknesses, Opportunities, and Threats) analyses, assessing their collaborative work and soft skill development. This analysis provided valuable insights into their progress and areas for improvement.

At the end of the Challenges, the technical mentor and the soft-skills mentor for each group completed a comprehensive evaluation form so as to provide feedback for the students. The evaluation form can be seen in **Appendix A**.

The evaluation form asked the mentors to rate different aspects of the students' challenge work according to the following categories: No evidence, Requires Improvement, Meets expectations, Exceeds expectation. In addition to this, mentors wrote comments to provide more detailed feedback and a qualitative evaluation.

#### Concerns:

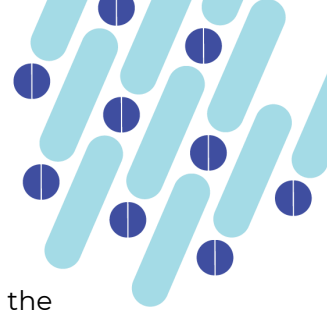
Despite the diligent monitoring efforts, some challenges were encountered during the monitoring of students' collaborative work:

1. **Differences in Group Mentoring:** There were variations in the approaches taken by different mentors while guiding their respective student groups. These differences in mentoring styles had an impact on the outcomes and experiences of the student teams.
2. **Communication Challenges:** The collaborative work in some groups was affected by differences in students' English language proficiency. This language barrier hindered effective communication and cooperation within the groups.

#### **Suggested Improvements:**

To address the identified issues and further enhance the monitoring of students' collaborative work, the following improvements are recommended:

1. **Active Communication to Solve Issues:**  
Encouraging more active communication between mentors and students can help in promptly addressing any challenges that arise during the collaboration process. Regular communication will ensure that issues are identified and resolved in a timely manner, promoting a more conducive learning environment.
2. **Enhanced Mentor Preparation:**



Providing mentors with higher levels of preparation and guidance before the program's commencement will ensure that they have a clear understanding of their roles and responsibilities. This will lead to more consistent and effective mentorship throughout the program.

3. *Active Participation of Soft Skill Mentors from the Beginning:*

To support the development of students' soft skills, the involvement of soft skill mentors from the very beginning of the program is vital. Their early engagement and active participation in all weekly meetings will enable them to establish a strong foundation for fostering effective teamwork, communication, and problem-solving among the students.

By implementing these improvements, the monitoring of students' collaborative work can be strengthened, facilitating a more enriching and impactful learning experience for all participants.

### 3.6 Culminating Event: Showcasing Achievements

The culmination of the AIIS program was marked by the final event, where each student group had the opportunity to showcase their achievements and present their work.

During this event, each group was allocated a time slot of 10 minutes for their presentation, followed by a 5-minute question and answer session. The format allowed 2 or 3 students from each group to deliver the presentation, highlighting the collaborative efforts and the outcomes of their challenges. The agenda for the final event can be seen in Table 4.

Table 4: Agenda for the final event.

Agenda:	Topic:
15:00	Welcome
15:05	Order of the day, instructions, review of challenges, publication of the winners)
15:15	Challenge 10 - Fetal Health
15:27	Challenge 2 - Heart Attack
15:39	Challenge 3 - Framingham Heart Study
15:51	Challenge 4a - Maternal Health Risk 1
16:03	Challenge 4b - Maternal Health Risk 2
16:15	Challenge 5 - Heart Failure
16:30	Break
16:40	Challenge 6 - Hepatitis C
16:52	Challenge 7 - Stroke
17:04	Challenge 8 - Diabetes
17:16	Challenge 9 - Breast Cancer
17:28	Challenge 1 - Mania
17:55	Closure





Following the presentations, a group of independent evaluators (i.e. representatives from each partner organization that was not involved in the challenges) assessed the students' work.

The evaluators assessed the presentations across a range of criteria explained in figure 4. The assessment form can be seen in figure 5 and the scores each group received can be seen in Table 5.

## Evaluation of AIIS Challenges Solutions

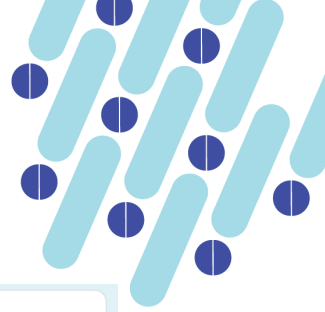
Over the past month, 11 groups of students have been working together to solve a medical AI/soft-skills Challenge and now it is the time to present their solutions!  
You were chosen as one of the evaluators!

Here are some **guidelines**:

- Each Partner Organization has to provide one evaluator. That is why you should **mark the organization you are representing** in the 1st question.
- Also you have to **evaluate all the presentations** based on 5 criteria:
  - 1. Quality of presentation.**
  - 2. Innovation** of the solution.
  - 3. Technological maturity** of the solution.
  - 4. Project's development and evolution** offered by the solution.
  - 5. Positive impact** on financial, personal, social and/or environmental sector offered by the solution.
- Finally, you will **evaluate each presentation after it is concluded** but you will submit the form once the event is done.

Please complete this short Google Form for each presentation, ranking it on certain evaluation criteria on a Likert scale from 1-5.

Figure 4: Instructions for the evaluation of the Challenge presentations.



⋮

Please rate the overall **quality** of the **1st presentation**: \*

	1	2	3	4	5	
Very Poor	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Very Good

Do you think that the **solution** presented in the **1st presentation** had elements of **innovation**? \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

Do you think that the **solution** presented in the **1st presentation** had **technological maturity**? \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

Do you think that the **solution** presented in the **1st presentation** helps project's **development and evolution**? \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

Do you think the solution presented in the **1st presentation** has a **positive impact** on the financial, personal, social and/or environmental sector? \*

	1	2	3	4	5	
Strongly Disagree	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Strongly Agree

Figure 5: Example of a Challenge evaluation form.

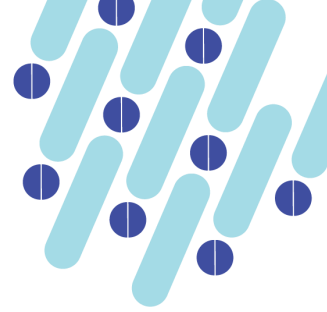


Table 5: Overall scores from the final presentation per group.

	Total score
1st Presentation: Fetal Health	173
2nd Presentation: Heart Attack	173
3rd Presentation: Framingham Heart Study	193
4th Presentation: Maternal Health Risk (Group 1)	173
5th Presentation: Maternal Health Risk (Group 2)	195
6th Presentation: Heart Failure	181
7th Presentation: Hepatitis C	172
8th Presentation: Stroke	181
9th Presentation: Diabetes	147
10th Presentation: Breast Cancer	181
11th Presentation: Mania	190

To inspire and reward students, prizes in the form of headphones and VR glasses were offered to the top-performing teams: "5th Presentation: Maternal Health Risk (Group 2)" and "3rd Presentation: Framingham Heart Study." These prizes were presented during a celebratory event in January 2023.

Strengths:

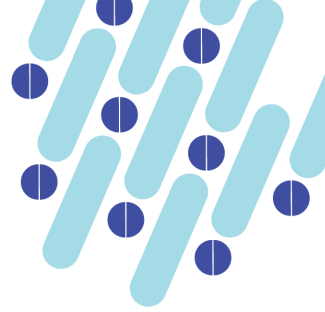
The final event received positive feedback for the well-defined evaluation form, which enabled external members to assess the student groups' performances effectively. This comprehensive evaluation process ensured a fair and objective assessment of the students' work.

Suggested Improvements:

To further enhance the final event and maximize its impact, the following improvement is recommended:

Early Definition and Dissemination of Final Event: To increase participation and engagement, the date and details of the final event should be defined and communicated earlier in the program timeline. By providing advance notice, students, mentors, and external members can plan and prepare for the event, ensuring optimal attendance and support for the participating groups.

By implementing this improvement, the final event can be more widely disseminated and appreciated as a platform for recognizing the students' efforts and accomplishments. A well-attended final event will foster a sense of celebration and pride among the participants, highlighting the success of the AIIS program and inspiring future iterations of the program.



## 4 Conclusion

The AIIS program has been a remarkable journey of collaborative learning and skill development for the participating students. Throughout the implementation of the individual online learning programme, the challenges and the monitoring of their individual online and collaborative work, several key aspects have been evaluated to assess the program's success.

### **Technical Efficiency:**

The program's technical efficiency was evident throughout its implementation in the well-structured organization plan, weekly activity reports, and the availability of resources through Google Drive and student materials in five languages was a significant achievement, fostering inclusivity and ensuring accessibility for a diverse group of participants. However, to further enhance the learning experience, we recommend the addition of subtitles in the five languages for all instructional videos. Subtitling will provide additional support to students, ensuring better comprehension and engagement with the course content.

The well-structured organization plan, including the clear definition of tasks, responsibilities, and deadlines, facilitated smooth coordination among partners and contributed to the program's overall success. The weekly activity reports and SWOT analyses provided valuable insights into the students' progress, allowing for timely intervention and support when needed. Moreover, the utilization of Google Drive for resources and information dissemination was efficient and convenient for both mentors and students.

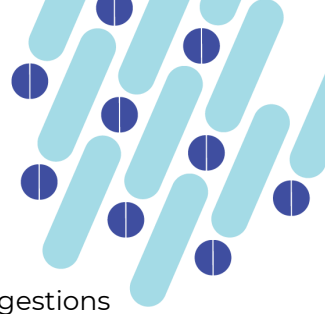
Nonetheless, we acknowledge that there were challenges related to communication tools, such as MailChimp emails being marked as spam for some recipients. In future iterations, we will explore alternative communication platforms to ensure seamless communication and avoid potential disruptions.

By capitalizing on the program's technical strengths and addressing the identified areas for improvement, we are confident that the AIIS program will continue to empower students and foster a transformative learning experience in the realms of AI and healthcare.

### **Added Value:**

The program's added value was reflected in the students' increased awareness of AI's impact on patient care and diagnostics. As they developed their technical skills, they also gained a deeper appreciation for the human-centric aspects of healthcare. The SWOT analyses conducted by the students further highlighted the development of their soft skills, emphasizing effective teamwork, communication, and problem-solving abilities. This holistic approach to learning provided the students with valuable insights and experiences that will benefit them in their future careers.

### **Suggestions for Improvement:**



To further strengthen the program and enhance its impact, several valuable suggestions for improvement have been identified:

1. **Specify Mentor Profiles and Insist on Their Expertise:** Defining mentor profiles with a strong emphasis on AI and soft skills expertise will better equip them to support the student groups effectively.
2. **Communication and Planning:** Advance scheduling of weekly meetings, providing students with meeting details during registration, and conducting mandatory starting and final meetings will foster effective communication and collaboration.
3. **Smaller Student Group Sizes:** Reducing the number of students per group will allow for more focused mentor-student interactions and facilitate efficient collaboration.
4. **Early Definition and Dissemination of Final Event:** Early communication of the final event's details will ensure maximum participation and appreciation of the students' accomplishments.

By implementing these improvements and building on the program's strengths, the AIIS program can further evolve into a transformative and empowering learning experience for future participants.

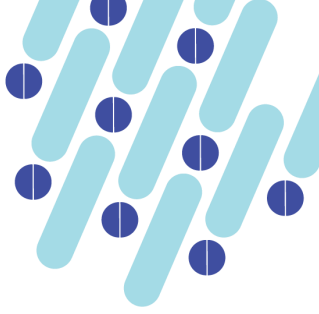
The dedication and commitment of all stakeholders, including mentors, students, and external members, have contributed significantly to the program's success. Their valuable feedback and active engagement will play a pivotal role in shaping the future iterations of the AIIS program and advancing collaborative learning in the field of AI and healthcare.

To further expand the reach and impact of the AIIS program, we propose opening the course to students from other specialties beyond medicine. As the pilot program has demonstrated its efficacy and value in fostering technical and soft skills, extending the program's scope will provide students from diverse fields the opportunity to engage with AI and its applications in their respective domains.

By welcoming students from disciplines such as pharmacy, biomedicine, nursing, and others, the AIIS program can foster interdisciplinary collaboration and knowledge exchange. The inclusion of students from various specializations will enrich the group dynamics and challenge-solving approaches, leading to innovative and holistic solutions to healthcare-related problems.

To support the integration of students from different specialties, we will tailor the challenges and content to align with their specific interests and learning objectives. Moreover, we will provide additional resources and mentorship to accommodate the unique perspectives and needs of participants from various backgrounds.

Opening the course to other specialties will not only broaden the program's impact but also contribute to the establishment of a diverse and interconnected community of learners, working together to drive advancements in AI and healthcare.



- Appendix A



## Challenge Evaluation

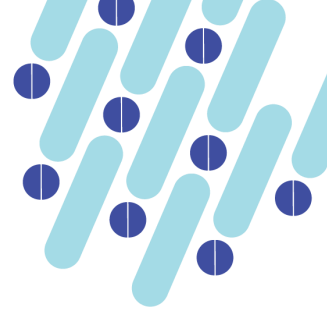


Artificial Intelligence, Innovation & Society, the future of medicine – AIS

<b>Student</b>	<b>names:</b>	
<b>name(s):</b>	<b>Evaluator</b>	
	<b>Evaluation Date</b>	

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2



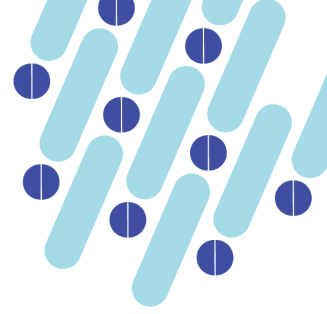
## 1 Evaluation of technical skills

Students are evaluated on the technical AI skills they have developed during the course.

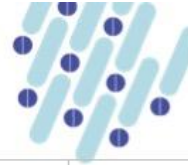
	No evidence	Requires improvement	Meets expectations	Exceeds expectations	Exceptional	Comments
<b>Data Exploration</b> <ul style="list-style-type: none"> <li>- Students conducted a thorough exploration of the data.</li> <li>- They demonstrate a good understanding of the dataset and what the features represent.</li> <li>- Any issues, such as missing values, are identified.</li> </ul>						
<b>Ideation and problem setting</b> <ul style="list-style-type: none"> <li>- Students attempted to solve a well-defined problem.</li> <li>- Their reasons for attempting to solve this problem are well explained.</li> <li>- Students consider whether high performance or explainability is more</li> </ul>						

3



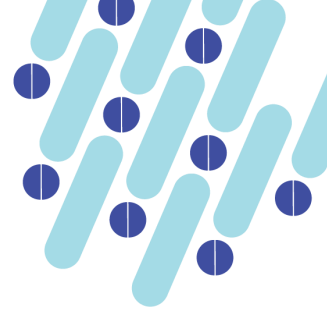


important for their problem context						
<b>Modeling</b> <ul style="list-style-type: none"> <li>- Separate training and test sets are created from the dataset.</li> <li>- Students attempted to train a machine learning model to help solve their problem.</li> <li>- Any issues they experienced are well documented and explained.</li> </ul>						
<b>Metrics</b> <ul style="list-style-type: none"> <li>- Students chose logical metrics to evaluate their model.</li> <li>- The results are well presented with visualisations.</li> <li>- Suggestions are offered for how to improve the results they achieve.</li> </ul>						



<b>Model interpretation</b> <ul style="list-style-type: none"> <li>- Students make an effort to interpret their model.</li> <li>- They are able to identify the most important features for prediction.</li> <li>- Students reflect on whether their results and interpretation are logical.</li> </ul>						
Sub-total/overall comments						

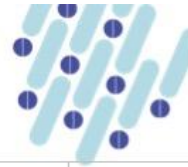




## 2 Evaluation of Soft-skills

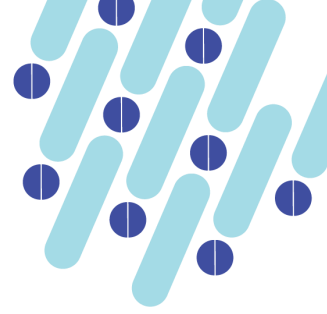
	No evidence	Requires improvement	Meets expectations	Exceeds expectations	Exceptional	Comments
<b>Teamwork</b> <ul style="list-style-type: none"> <li>- Students took benefits of the multidisciplinary of their team</li> <li>- Students were able to coordinate their work in the distance</li> <li>- Students are able to justify the distribution of roles among their team</li> </ul>						
<b>Ethics</b> <ul style="list-style-type: none"> <li>- Students questioned the ethic of their work</li> <li>- Students considered the question of the protection of data given for the challenge</li> </ul>						
<b>Organisation</b>						

6



<ul style="list-style-type: none"> <li>- Students are able to explain their choices regarding the organisation of their work, the tools used and the solutions chosen.</li> <li>- Students used an online management / communication tool</li> <li>- Students were able to respect the deadlines and attend all meetings with the mentors.</li> </ul>						
<b>Sense of initiative and creativity</b> <ul style="list-style-type: none"> <li>- Students were able to consider and evaluate different points of views</li> <li>- Students show creativity in the solution of the challenge.</li> <li>- Students were able to work in relative autonomy.</li> <li>- Students were able to take decision and can justify their choices</li> </ul>						

7



<p>Quality of the presentation</p> <ul style="list-style-type: none"> <li>- Communication / clarity of the ideas presented</li> <li>- Verbal and non-verbal elements</li> <li>- Vocabulary used</li> <li>- Supporting materials (slides)</li> </ul>						
<p>Sub-total/overall comments</p>						

### 3 Additional comments if needed

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