

INDUSTRIAL & PUBLIC AI (ARTIFICIAL INTELLIGENCE) CHALLENGE: PUBLIC SELECTION NOTICE FOR STUDENTS

INTRODUCTION

The Industrial & Public AI Challenge (hereinafter, "Competition", or "Initiative") is an initiative of advanced training and promotion of Trentino research dedicated to university students and researchers promoted by Fondazione Hub Innovazione Trentino (hereinafter, "HIT") and created in collaboration with the University of Trento, the Bruno Kessler Foundation, Trentino Sviluppo and Confindustria Trento (in the context of the Digital Innovation Hub Trentino–Alto Adige/Südtirol) and the Autonomous Province of Trento – PAT.

The initiative has dissemination, knowledge, and training purposes. The main objective is to encourage the development of technology transfer activities and collaborations between researchers and companies or public administrations, in an open innovation context:

- allowing companies and public administrations to learn about the benefits of using methods of analysis and optimization of industrial production processes as well as public services through the application of artificial intelligence technologies;
- allowing university students to master these methodologies by applying them to industrial and public problems and challenges, improving their preparation (Challenge-Based Learning);
- offering teachers and researchers an opportunity to transfer their knowledge and technological know-how.

Specifically, the Initiative allows participating companies and public administrations (hereinafter, "Challenge owners") to benefit from data analysis, production of advanced statistics, creation of predictive models and guidelines for the adoption of data-driven solutions for the planning and optimization of industrial processes and public services based on artificial intelligence technologies.

The activities of the Initiative are mainly carried out by students and young researchers competent in the methodologies described (hereinafter, "Solver"): they will work in groups to analyze and propose solutions to the problems or objectives of exploration of opportunities presented by the participating companies and public administrations (of hereinafter, "Challenges"). Solver groups will be supported by professional mentors (researchers and startups – hereinafter, "Mentors").

Specifically, by way of example, we mean:

- **Challenges:** each Challenge selected in the initiative will be either presented by a company ("Industrial AI Challenge" type), or by a public administration ("Public AI Challenge" type), as follows:
 - **Industrial AI Challenges:** corporate objectives related to the collection and enhancement of large amounts of data from industrial processes to

improve business performance, in the following areas of industrial innovation (hereinafter, "Areas") exemplary, but not exhaustive: (1) logistics and supply chain; (2) production planning; (3) predictive maintenance; (4) component status verification; (5) quality control and SPC (Statistical Process Control); (6) robotics and automation.

- **Public AI Challenges:** improvement of performances, optimization, and prediction of events entailing with the organization and delivery of public services and procedures, in sectors such as (1) cultural heritage management (e.g. automated analysis of images and texts); (2) weather prediction (detection of sensor anomalies from meteorological data); (3) education (optimizing available resources and needs); (4) tourism (prediction of tourist future volume flows).
- **Activities:** use of methodologies and techniques for the study of production and logistic processes, their possible sensorization, and analysis of large amounts of data aimed at the production of intelligent systems and predictive models to support decision-making processes in companies and public administrations. Specifically, the Activities may involve Solvers in the execution of the following tasks: analysis of the Challenge with personnel from the Challenge owner and the Mentor (objectives and expected results); analysis and evaluation of the quantity and quality of available data; in-situ visit to production plants or offices to observe the production process, machinery involved, Challenge context; analysis of the production processes involved; requirements analysis for any sensorization of lines with IoT - Internet of Things solutions; analysis of the existing data; creation of databases on cloud services and virtual machines; data acquisition support; data cleaning; integration of data from third parties; pre-processing; extraction of relevant features; data analysis with advanced statistical methods; machine learning; creation of predictive models; feedback and reporting to companies and organizers; production of suggestions and guidelines for the enhancement of data and processes in the Challenge owner.

ART. 1 – SUBJECT OF NOTICE

This Notice is aimed at selecting bachelor's, master's, or doctoral students, recent graduates and Ph.D. graduated up to 18 months from the attainment of the last degree, who will have access to the Industrial & Public AI Challenge as a Solver.

ART. 2 – CONDUCT OF THE CHALLENGE

The Competition requires groups of multidisciplinary Solvers (hereinafter, "Teams") to work in parallel over the course of approximately two months to carry out the aforementioned Activities on the selected Challenges. For each Challenge, there will be one or more dedicated Teams, which will work independently, albeit assisted by a Mentor who will support them in carrying out the Activities and in the production of a short final report containing solutions for tackling the matched Challenge (hereinafter, "Results"). The selection of the Solvers, the creation of the Teams, and their training will be carried out by HIT, in coordination with the partners of the initiative.

The Initiative will be organized according to the following schedule:

- **Kick-off meeting (KOM):** Wednesday, 20th September 2023 (afternoon) for the Industrial AI challenge and Wednesday, 27th September 2023 (morning) for the Public AI challenge: presentation of the Challenges and optimization objectives to the Solver groups by the selected Challenge owners, at the School of Innovation of the University of Trento, in via Tommaso Gar 16/2.
- **Execution of Activities:** approximately 11 weeks in which the Teams will carry out the above activities independently, in collaboration with the selected Challenge owners, assisted by expert Mentors. The phases of the Competition and the Activities to be carried out during the 11 weeks may differ according to the type of Challenge assigned. In total, it is estimated that the Competition will engage the student for approximately 75 hours, including training activities, kick-off meeting, final event, business meetings, visits, group, and individual activities.
- **Final public events:** Teams will present their Results without confidential content, during a final event open to the public. Private full presentations to Challenge owners will be organized autonomously by teams prior to the final events. The events will be held at the School of Innovation of the University of Trento, in Via Tommaso Gar 16/2 on Wednesday, 6th December 2023 (afternoon) for the Industrial AI Challenge, and Wednesday, 13th December 2023 (morning) for the Public AI Challenge.

At the end of the Challenge, HIT will work with the participants in order to facilitate the continuation of the collaboration between Challenge owners, students, and mentors in order to further mature the Results and proceed to their enhancement.

ART. 3 – METHOD OF EVALUATION OF RESULTS AND AWARDING OF TEAMS

A Commission of experts appointed by HIT will express an evaluation on the Results presented by each Team and will formulate one ranking per each Challenge type, based on the following criteria:

- Criterion 1: the ability to carry out the Activities correctly (from 1 to 5 points).
- Criterion 2: completeness and maturity of the Results (from 1 to 5 points).
- Criterion 3: innovativeness of the Results (from 1 to 5 points).
- Criterion 4: potential business impact of the Results (from 1 to 5 points).
- Criterion 5: effectiveness of the presentation of the Results (from 1 to 5 points).

Solvers who have fully accepted the conditions in Art. 8 will be entitled to compete for the award of a final prize.

For each ranking formulated by the Commission, each member of the Team who has totaled the highest score in the ranking will receive an e-ink tablet as a prize, for drawing and taking notes and for reading documents and textbooks, such as (for example and not exhaustive) "reMarkable", the graphics tablet "Wacoon Bamboo Slate", the smart writing set "Ellipse" by Moleskine. In the case of a tied score, the Solver group with the highest score on criterion 1 and, subsequently, on the following criteria, will prevail.

ART. 4 – METHOD OF SELECTION OF PARTICIPATION APPLICATIONS

Students interested in participating in the Industrial & Public AI Challenge must fill out the application form accessible from the page <https://www.trentinoinnovation.eu/en/innovate/innovation-tools/ai-challenge/ai-challenge-for-students/> by **Friday, 30 June 2023, at 23:59 - Central European Summer Time**. Applications received after the deadline indicated above or whose form is not complete in all its parts will be considered inadmissible, even if the different or non-presentation or the delay in submitting the application to participate in this procedure are due to cases of force majeure, unpredictable events or third-party actions.

In any case, HIT reserves the right to modify, suspend, extend, and revoke this procedure at any time or not to follow it up, if, at its sole discretion, it detects the need or opportunity.

Eligibility requirement for participation in the Challenge as a Solver is, alternatively:

- A. be enrolled at the University of Trento as a student or doctoral student;
- B. have obtained a degree from the University of Trento within 18 months of the kick-off of the initiative.

Having verified the presence of the eligibility requirement, HIT will identify the students who will be invited to participate in the Initiative as Solver, drawing up a **ranking of eligibility** based on the following criteria:

1. Having already attended or been attending courses within which the methodologies and techniques necessary to carry out the Activities have been discussed (from 1 to 5 points).
2. Having already carried out the Activities by applying them to Challenges or projects in the course of curricular initiatives (term papers, project work, internships, theses), extracurricular (hackathon, challenge, contest, etc.), or work experiences (from 1 to 5 points).
3. Having had work or volunteering experiences, even if not related to the Activities (from 1 to 5 points).
4. Have convincing motivations to support the application (from 1 to 5 points).

To be considered suitable, candidates must achieve a minimum score of 13. Once the ranking has been drawn up, the Commission will invite suitable candidates to join the Competition. In the event of equal scores, the application with an earlier date will be selected. It is understood that the Commission will proceed to select an adequate number of suitable candidates in accordance with the number of Challenge owners that will apply to the Initiative.

By **Friday 14 July 2023**, candidates will receive an email communication regarding the results of the selection process.

Within 5 days of receiving this communication, the selected candidates must **confirm their participation** in the initiative by e-mail to ai-challenge@trentinoinnovation.eu. In the absence of such confirmation, HIT will propose participation in the Initiative to the

candidate in the next position in the ranking. At the end of the process, the names of the selected candidates will be published on the initiative's web page.

ART. 5 – CONNECTION WITH EXISTING COURSES FROM THE UNIVERSITY OF TRENTO AND ECTS RECOGNIZED

To all Solvers who complete the Initiative, HIT will deliver a certificate of participation in the initiative. To students enrolled in degree courses of the Department of Information Engineering and Information Science (DISI) and the Department of Industrial Engineering (DII) of the University of Trento who will complete the Initiative, and who have included the activity within their own study plan, 3 type F ECTS will be recognized: for more information, please consult the note of the University of Trento published together with this Notice.

In order to maximize impact and feasibility for all participants, the Initiative (especially the Industrial AI Challenge type) has been designed in strong synergy with the "**AI for Innovation**" course of the Master in Artificial Intelligence Systems of the Department of Information Engineering and Science of the University of Trento and the "**Laboratory of Internet of Things**" course of the Department of Industrial Engineering (DII) of the University of Trento. Students who include at least one of the above-mentioned two exams in their own study plan are automatically and formally considered participants in the Industrial AI Challenge, accepting the terms and conditions of this notice. The participation of such students is not subject to the selection procedures indicated in Article 4 of this notice and is authorized to enter the Initiative at any time.

Students enrolled in these courses who will complete the Initiative may be awarded specific additional ECTS. For more information, see the note published by the University together with this Notice.

In order to know these aspects in detail, we suggest interested students to refer to the referent teachers: Prof. Marco Formentini ("AI for Innovation", DISI - marco.formentini@unitn.it) and Prof. Davide Brunelli ("Laboratory of Internet of Things", DII - davide.brunelli@unitn.it).

ART. 6 – CONFIDENTIALITY

The Solver undertakes to keep the data and information concerning selected Challenges confidential, except for the following data and information, which may be freely disclosed in connection with the promotion needs of the Initiative: Challenge owner name, website URL, industry sector, a brief description of the activity, name of the Challenge. Furthermore, the Solver also undertakes to keep the Results confidential and not to disclose them in any way and any form, without prejudice to the different written consent, even partial, of the concerned Challenge owner. This confidentiality bond remains for three (3) years from the start date of the Competition.

However, the Challenge owner undertakes to allow the Solvers to be able to present in public, at the end of the Competition (at the final event of the Challenge, and during any presentations to the participants of the connected Courses), some non-confidential information, to be agreed, regarding the Challenge, the Activities carried out, and the Results. Such information and data will be agreed upon in advance between the Challenge owner and the Solvers.

ART. 7 – INTELLECTUAL PROPERTY

The intellectual property rights of the Results will belong to the Challenge owner, without prejudice to the right of the Solvers to be recognized as authors or inventors.

By participating in the Initiative, Challenge owners in any case authorize Solvers to:

- mention their participation in the Initiative, making express reference to the name of the Challenge and to the Challenge owner for which they carried out the Activities;
- use part of the Results (not containing confidential material, to be agreed) to make public presentations during events, courses, and initiatives related to the Challenge, for educational and dissemination purposes, at the end of the Initiative.

ART. 8 – ABSENCE OF GUARANTEES. EXEMPTION OF LIABILITY

The Results are presented by the Solvers and accepted by the Challenge owner "as is". Neither HIT nor the Solvers make any representations or warranties that the Results (i) are of a particular technical quality; (ii) are fit for a particular purpose; (iii) do not violate the rights of third parties or juridically protected subjective positions.

Neither HIT nor the Solvers assume any responsibility for the correctness, validity, originality, and quality of the Results, which will be considered in complete autonomy by the Challenge owner.

The participating Challenge owners expressly exempt HIT and the Solvers from any direct, indirect, incidental, consequential, punitive, or moral damage resulting from participation in the Challenge or from the use of the Results.

The Solvers, by submitting their candidacy, expressly exonerate HIT and the Challenge owners, and the Initiative partners from any direct, indirect, incidental, consequential, punitive, or moral damage resulting from participation in the Initiative or from the use of the Results.

ART. 9 – PROCESSING OF PERSONAL DATA

Pursuant to art. 13 of the GDPR 2016/679, we inform you that all the data that will be in the possession of HIT in carrying out the procedure provided for in this Notice will be used exclusively for the purposes specified therein and will be processed with the aid of information systems in full compliance with the aforementioned legislation. The data will not be communicated or disclosed to third parties. The data controller is HIT, in the person of the pro tempore legal representative, who can be contacted for the exercise of the rights provided, including the right to access data, integration, rectification, and cancellation. To view the complete information, please refer to privacy policy (https://www.trentinoinnovation.eu/wp-content/uploads/2023/05/2023_AI-Challenge_Privacy-Policy_ENG.pdf).

ART. 10 – AUTHORIZATION TO PUBLISH YOUR OWN IMAGE

Solvers agree that HIT may publish their image in any form of media (print, websites, and the like) for the sole purpose of promoting and advertising the Initiative. HIT undertakes

not to use any image in such a way that it may harm or prejudice personal dignity or in any case for purposes other than those indicated therein and/or contrary to the law.

ART. 11 – TREATMENT OF PRIZES

The Initiative is to be considered to fall within the category "projects or studies in the commercial or industrial field, in which the awarding of the prize to the author of the chosen work is in the nature of consideration for the performance of the work or represents the recognition of personal title of encouragement in the interest of the community" pursuant to art. 6 Presidential Decree 26 October 2001, n. 430.

ART. 12 – RESPONSIBLE FOR THE PROCEDURE

The Head of the Procedure pursuant to the L.P. n. 23/1992 and s. m. e i.: ing. Luca Mion.

Trento, 29/05/2023

Prot. HITF-29.05.2023-000481-P

Luca Mion
Head of Technology Transfer and Open Innovation
Hub Innovazione Trentino – Fondazione
(SIGNED IN ORIGINAL)