|  |  |  |
| --- | --- | --- |
| ITU Logo | INTERNATIONAL TELECOMMUNICATION UNION**TELECOMMUNICATIONSTANDARDIZATION SECTOR**STUDY PERIOD 2017-2020 | FG-AI4H-K-044 |
| **ITU-T Focus Group on AI for Health** |
| **Original: English** |
| **WG(s):** | Plenary | E-meeting, 27-29 January 2021 |
| **DOCUMENT** |
| **Source:** | ITU TSB |
| **Title:** | ITU AI/ML in 5G Challenge review and learnings for FG-AI4H |
| **Purpose:** | Discussion |
| **Contact:** | Thomas Basikolo ITU | Email: thomas.basikolo@itu.int |
| **Contact:** | Reinhard SchollITU | Email: reinhard.scholl@itu.int |

|  |  |
| --- | --- |
| **Abstract:** | This document discusses the achievements of the 2020 edition of the ITU AI/ML in 5G Challenge and the plans for 2021. FG AI4H may wish to consider the learnings and launch an AI4H Challenge. See also the accompanying slide set, K-044-A01. |

# The ITU AI/Machine Learning in 5G Challenge

# The ITU AI/ML in 5G Challenge brings together like-minded students and professionals from around the globe to study the practical application of artificial intelligence (AI) and machine learning (ML) in emerging and future networks.

# The Challenge aims to demonstrate and validate ITU standards. In mapping solutions to ITU standards, the Challenge contributes to the growth of the community by supporting iterative evolution of these ITU standards.

# The first edition of the Challenge was conducted in 2020 and welcomed over 1300 participants from 62 countries, forming 911 teams. During the Grand Challenge Finale which took place on 15–17 December 2020 (online), selected teams competed for prizes totalling 33 000 CHF and global recognition.

# The Challenge was sponsored by UAE Telecommunications Regulatory Authority (Gold sponsor) and Cisco and ZTE (Bronze sponsors).

# The ITU AI/ML in 5G Challenge enabled participants to connect with new partners in industry and academia — and new tools and data resources — to solve real-world problems with AI/ML, showcase their talent and share new experiences. As more and more data and computing power emerge, it is important to identify and solve some of the real-world problems confronting network operators so that 5G can reach its full technical potential in terms of speed and efficiency.

# Twenty-three problem statements were contributed by industry and academia in Brazil, China, India, Ireland, Japan, Russia, Spain, Turkey and the United States. These hosts offered resources and expert guidance to support participants in addressing their challenges. Problem statements used synthetic data, open data or real data.

# The Challenge was accompanied by the ML5G webinar series: a one-hour slot was given to a single expert for a 30-40 min presentation, with 30-20 min Q&A. From June to December 2020, close to 30 webinars were run (about one webinar per week). The viewership (live and replays; excluding the Grand Challenge Finale on 17 December) was over 7’000 people. The Grand Challenge Finale on 17 December was also livestreamed on social media and attracted almost 4’000 viewers.

# A “Challenge Management Board” and by a “Judges Panel” comprising of experts from academia and industry provided the governance for the Challenge.

# The ITU NEWS Magazine featured a special edition of the Challenge in December 2020 (91 pages, available in the six languages English, French, Spanish, Russian, Arabic, Chinese).

# The peer-reviewed ITU Journal for Future and Evolving Technologies (free, fast, for all, and on its way to an impact factor) will feature a special edition “AI and machine learning solutions in 5G and future networks”, inviting original research papers from those who participated in the Challenge.

# In future editions of the ITU Challenge, we aim to provide a reference implementation of an end-to-end ML pipeline. Such reference implementations could include notebooks for ML coding and integration; tools for data processing and management; and tools for ML model selection, training, optimization and verification. We also aim to enable access to ITU–standard toolsets for initiatives such as plugfests and hackathons and to set the stage for collaboration in open-source projects and standardization work. A “Sandbox” (with GPUs) will provide computing power and storage for data sets.

# The Challenge enabled an atmosphere of collaboration and brings new opportunities for industry, academia, and especially small and medium-sized enterprises (SMEs) to influence the evolution of ITU standards.

# More information about the Challenge can be found here:

* Old website: <https://www.itu.int/en/ITU-T/AI/challenge/2020/Pages/default.aspx>,
* New website: <https://aiforgood.itu.int/ai-ml-in-5g-challenge/>
* ITU News Magazine: <https://www.itu.int/en/myitu/Publications/2020/12/10/08/43/ITU-News-Magazine-no-5-2020>.
* The solutions can be accessed in several repositories on the Challenge GitHub: <https://github.com/ITU-AI-ML-in-5G-Challenge>.

# AI4H Challenge

# We invite FG-AI4H to consider the learnings of the ITU AI/ML in 5G Challenge including the webinar series, the special issue of the ITU Journal, the dedicated issue of the ITU NEWS Magazine and the sandbox environment. If FG AI4H decided to launch an AI4H Challenge, we would be happy to collaborate, share our insights and help make this challenge a success. The solutions from the AI4H Challenge could be useful to the FG-AI4H community since they can form part of the contributions or specifications, inform future direction of different working groups, and bring new members who can contribute and advance the work of FG-AI4H.

# We will continue to encourage new partnerships in AI/ML (as well as verticals) and establish guiding principles for the sharing of tools and data resources necessary to enact these partnerships. We are welcoming new partners, new problem statements, new tools and new data resources. We are creating new opportunities for industry and academia to solve problems together, and new opportunities to influence the direction of ITU standards development and application.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_