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**DOCUMENT**

**Source:** TG-Derma Topic Driver

**Title:** Att.2 – CfTGP (TG-Derma)

**Purpose:** Engagement

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**Abstract:** Calling for members from Health and Information Technology communities with a vested interest in Artificial Intelligence (AI) for Dermatology. Be an active team member dedicated to establishing a standardized benchmarking platform for AI for Dermatology within the World Health Organization (WHO)/ International Telecommunication Union (ITU) Focus Group on “Artificial Intelligence for Health” (FG-AI4H).

The Topic Driver Maria Vasconcelos (Fraunhofer Portugal) was replaced by Weihong Huang (Xiangya Hospital Central South University, China) after Meeting J. Weihong was replaced by Sharad Kumar (Nurithm Labs, India) at Meeting M and he was replaced by Harsha Jayakody (Flash Health, Sri Lanka) at meeting P.

## **ITU/WHO Focus Group on artificial intelligence for health (FG-AI4H)**

### **Call for Topic Group Participation: Intelligence (AI) for Dermatology**

The International Telecommunication Union (ITU)/World Health Organization (WHO) Focus Group on “Artificial Intelligence for Health” (FG-AI4H; <https://itu.int/go/fgai4h>) seeks engagement from members of the medical and artificial intelligence (AI) communities (including clinicians, technologists, entrepreneurs, potential benchmarking data providers, machine learning experts, software developers, researchers, regulators, policy-makers, companies/institutions, and field experts) with a vested interest in shaping the benchmarking process of AI for dermatology.

#### **1 About FG-AI4H**

Over the past decade, considerable resources have been allocated to exploring the use of AI for health, which has revealed an immense potential. Yet, due to the complexity of AI models, it is difficult to understand their strengths, weaknesses, and limitations. If the technology is poorly designed or the underlying training data are biased or incomplete, errors or problematic results can occur. AI technology can only be used with complete confidence if it has been quality controlled through a rigorous evaluation in a standardized way. Towards developing this standard assessment framework of AI for health, the ITU has established FG-AI4H in partnership with the WHO.

Thus far, FG-AI4H has established twenty-four topic groups. The topic groups are: use of AI in AMR, cardiology, dermatology, dental diagnostics, diabetes, endoscopy, falsified medicine, falls among the elderly, fertility, malaria detection, maternal and child health, musculoskeletal medicine, histopathology, neuro-cognitive diseases, ophthalmology (retinal imaging diagnostics), outbreaks, point-of-care diagnostics, psychiatry, radiology, snakebite and snake identification, symptom assessment, tuberculosis, and volumetric chest computed tomography.

Each topic group agrees upon representative benchmarking tasks in a pragmatic, best-practice approach, which can later be scaled and expanded to similar tasks. Every benchmarking task should address a health problem of relevance (e.g., impacting a large and diverse part of the global population or challenging to treat) and for which AI technology would provide a tangible improvement relative to the current practice (e.g., better care, results, and/or cost/time effectiveness).

For a rigorous and sound evaluation, undisclosed test data sets must be available (or must be collected) for each task. All data must be of high quality and compliant with ethical and legal standards. In addition, the data must originate from a variety of sources so that it can be determined whether an AI algorithm can generalize across different conditions, locations, or settings (e.g., across different people, hospitals, and/or measurement devices). The format/properties of the data serving as input to the AI and of the output expected from the AI, as well as the benchmarking metrics are agreed upon and specified by the topic group.

Finally, the AI-to-be-evaluated will be benchmarked with the undisclosed test data on FG-AI4H computing infrastructure. Here, the AI will process single samples of the undisclosed test data set and predict output variables, which will be compared with the "ground truth." The results of the benchmarking will be provided to the AI developers and will appear on a (potentially anonymized) leaderboard.

## 2 Topic group: AI for Dermatology

A topic group is a community of stakeholders from the medical and AI communities with a shared interest in a topic. The objectives of the topic groups are manifold:

1. to provide a forum for open communication among various stakeholders,
2. to agree upon the benchmarking tasks of this topic and scoring metrics,
3. to facilitate the collection of high-quality labelled test data from different sources,
4. to clarify the input and output format of the test data,
5. to define and set-up the technical benchmarking infrastructure, and
6. to coordinate the benchmarking process in collaboration with the Focus Group management and working groups.

The primary output of a topic group is one document that describes all aspects of how to perform the benchmarking for this topic. The document will be developed in a cooperative way by suggesting changes as input documents for the next FG-AI4H meeting that will then be discussed and integrated into an official output document of this meeting. The process will continue over several meetings until the topic description document is ready for performing the first benchmarking.

This topic group is dedicated to AI for Dermatology. The approach to the diagnosis and management of dermatological conditions has considerably changed with the advent of newer technology and invention. Dermatology has taken the pole position for the implementation of AI in medical field because of its large clinical, dermatoscopical, and dermatopathological image database. A basic understanding of AI will therefore be a prerequisite to design and interpret medical studies in this area. So, it is important to consider the potential role of AI in the practice of dermatology[1]. In the last decade or so, AI is gradually finding its relevance in different fields of dermatology including skin cancer, eczema, psoriasis and facial aesthetics.

One in every three cancers diagnosed is a skin cancer, and every year approximately 3 million new cases of skin cancer is detected worldwide, more than breast cancer, prostate cancer, lung cancer and colon cancer combined [2]. According to Skin Cancer Foundation Statistics, one in every five Americans will develop skin cancer in their lifetime. Although Malignant Melanoma (MM) accounts only for a small percentage of this type of cancer, it is responsible for the most skin cancer related deaths. Early diagnosis of MM is, therefore, extremely important considering the high success rates of recovery if the malignancy is detected during the early stages of its development. Therefore, awareness activities and screening procedures are of high importance.

In psoriasis, AI mainly focuses on improving psoriasis classification methods using image recognition. AI was used to demonstrated to use systems' ability to predict response to biologic therapy in psoriasis patients, using parameters gauged at initial visit, so as to optimize treatment [3].

AI in facial aesthetics is also playing a huge role. More and more people are using smart apps to detect, augment and predict facial aesthetic conditions and try to find solutions through AI guided smart solutions [4].

As AI for Dermatology team members we may need to discuss about various dermatological solutions using AI world-wide and develop standards and benchmark image libraries which can be used by developers in the future.

## 3 Get involved

To join this topic group, please send an e-mail to the focus group secretariat ([tsbfgai4h@itu.int](mailto:tsbfgai4h@itu.int)) and the topic driver Harsha ([harsha@flash.health](mailto:harsha@flash.health)). Please use a descriptive e-mail subject (e.g. "Participation topic group AI for Dermatology"), briefly introduce yourself and your organization,

concisely describe your relevant experience and expertise, and explain your interest in the topic group.

Participation in FG-AI4H is free of charge and open to all. To attend the workshops and meetings, please visit the Focus Group website (<https://itu.int/go/fgai4h>), where you can also find the whitepaper, get access to the documentation, and sign up to the mailing list.

## References

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  4. Storm, M. (2022, January 18). *How artificial intelligence is revolutionizing aesthetic medicine: The aedition*. Aedit.com | Aesthetic Edit. Retrieved October 6, 2022, from <https://aedit.com/aedition/how-artificial-intelligence-is-revolutionizing-aesthetic-medicine>
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