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| **Abstract:** | This topic description document (TDD) specifies a standardized benchmarking for AI-based TG Dermatology. It covers all scientific, technical, and administrative aspects relevant for setting up this benchmarking (and follows the template structure defined in document FGAI4H-J-105). The creation of this TDD is an ongoing iterative process until it is approved by the Focus Group on AI for Health (FG-AI4H) as deliverable No.10.2. This draft will be a continuous input- and output document. |

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**CONTENTS**

|  |
| --- |
| [1 Introduction 3](#_Toc129795921)  [2 About the FG-AI4H topic group on Dermatology 3](#_Toc129795922)  [2.1 Documentation 3](#_Toc129795923)  [2.2 Status of this topic group 4](#_Toc129795924)  [3 Topic description 4](#_Toc129795925) |

**FG-AI4H Topic Description Document**

**Topic group- Dermatology**

# Introduction

Artificial intelligence, which incorporates the concept of computers and digital systems synthesizing and inferring new information, has recently been at the forefront of computer science research. Recent advances in digital healthcare and artificial intelligence have led to a new development in dermatology.

In this context, application of AI in contemporary dermatology ranges from the use of AI in melanoma1 to atopic dermatitis2. AI integration in dermatology has also progressed into public-facing tools and applications, such as Google’s DermAssist3 for identifying various skin conditions.

This topic description document specifies the standardized benchmarking for TG Dermatology systems. It serves as deliverable No. 10.2 of the ITU/WHO Focus Group on AI for Health (FG-AI4H).

# About the FG-AI4H topic group on Dermatology

The introduction highlights the potential of a standardized benchmarking of AI systems for Dermatology to help solve important health issues and provide decision-makers with the necessary insight to successfully address these challenges.

To develop this benchmarking framework, FG-AI4H decided to create the TG-Dermatology at the meeting P in Helsinki, Finland 19th to 22nd Sep 2022.

FG-AI4H assigns a *topic driver* to each topic group (similar to a moderator) who coordinates the collaboration of all topic group members on the TDD.During FG-AI4H meeting TG-Dermatology at the meeting P in Helsinki, Finland 19th to 22nd Sep 2022, Dr Harsha Jayakody from Flash health, Sri Lanka was nominated as topic driver for the TG-Dermatology.

## Documentation

This document is the TDD for the TG- Dermatology. It introduces the health topic including the AI task, outlines its relevance and the potential impact that the benchmarking will have on the health system and patient outcome, and provides an overview of the existing AI solutions for Dermatology. It describes the existing approaches for assessing the quality of Dermatology systems and provides the details that are likely relevant for setting up a new standardized benchmarking. It specifies the actual benchmarking methods for all subtopics at a level of detail that includes technological and operational implementation. There are individual subsections for all versions of the benchmarking. Finally, it summarizes the results of the topic group’s benchmarking initiative and benchmarking runs. In addition, the TDD addresses ethical and regulatory aspects.

The TDD will be developed cooperatively by all members of the topic group over time and updated TDD iterations are expected to be presented at each FG-AI4H meeting.

The final version of this TDD will be released as deliverable “DEL 10.2 Dermatology (TG-Dermatology).” The topic group is expected to submit input documents reflecting updates to the work on this deliverable **(Table 1)** to each FG-AI4H meeting.

## Status of this topic group

The following subsections describe the update of the collaboration within the TG-Dermatology for the official focus group meetings.

Regular FG-AI4H workshops and meetings proceed about every two months at changing locations around the globe or remotely. More information can be found on the official FG-AI4H website:

* <https://itu.int/go/fgai4h>

# Topic description

This section contains a detailed description and background information of the specific health topic for the benchmarking of AI in Dermatology and how this can help to solve a relevant ‘real-world’ problem.

Topic groups summarize related benchmarking AI subjects to reduce redundancy, leverage synergies, and streamline FG-AI4H meetings. However, in some cases different subtopic groups can be established within one topic group to pursue different topic-specific fields of expertise. The TG- Dermatology has no subtopics currently.

References

[1] Nasr-Esfahani E, Samavi S, Karimi N, Soroushmehr SMR, Jafari MH, Ward K, et al. Melanoma detection by analysis of clinical images using convolutional neural network. Conf Proc IEEE Eng Med Biol Soc. 2016;2016:1373–6.

[2] Nasr-Esfahani E, Samavi S, Karimi N, Soroushmehr SMR, Jafari MH, Ward K, et al. Melanoma detection by analysis of clinical images using convolutional neural network. Conf Proc IEEE Eng Med Biol Soc. 2016;2016:1373–6.

[3] Identify skin conditions with DermAssist [Internet]. Google Health. [cited 2022Dec4]. Available from: https://health.google/consumers/dermassist/

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