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| **Abstract:** | This document contains a draft set of rules for development of Cloud-based AI applications, their testing and benchmarking. This document also invites Medical & AI researchers to collaborate in development of Cloud-based AI applications for Health within the International Telecommunication Union (ITU)/World Health Organization (WHO) Focus Group on “Artificial Intelligence for Health” (FG-AI4H). |

**Introduction:**

Even after 60 years of rising of artificial intelligence (AI), its use in resource-poor countries is relatively less as compared to developed countries [1]. The cloud based AI services have enabled users to access their health information from anywhere, anytime [2]. The cloud based AI services have reduced the cost, manpower and paper work [3][4][5]. The Cloud based Applications and mobile apps have a significant positive impact on health and health care, however, there is a need to discuss on technology, security and legal issues related to these applications [6]. There is a wide scope for development of Cloud-based & Mobile Application based AI tools for healthcare within the sphere of International Telecommunication Union (ITU)/World Health Organization (WHO) Focus Group on “Artificial Intelligence for Health” (FG-AI4H).

**Objectives:**

The objectives of the topic groups are as follows:

1. to discuss on technology, security and legal issues related to cloud-based AI tools
2. to provide a forum for open communication among various stakeholders,
3. to coordinate the benchmarking process in collaboration with the Focus Group management

and working groups.

**Basic requirements for development of Cloud-based AI Applications for health [6]:**

The basic requirements for a Cloud-based AI Applications for health are as follows:

1. Adoption of Cloud:

The selection of cloud should be validated w.r.t. the desired requirement of the application being developed. There are public clouds, private clouds, community clouds and hybrid clouds available in the network.

1. Performance of cloud:

The cloud should be validated with respected to its subscription cost, expendability and speed.

1. Keys features of cloud applications [7]:
* Settings and Configurations of the application may be stored in the environment in place of application.
* Database servers may be kept separate from application server
* Port binding should be flexible
* Scalability of the application & data should be designed intelligently
1. Security Validation [8]:
* The provider of cloud should ensure secure data access, transfer and storage.
* The provider should provide visibility of security integrity and tampering

The European Network and Information Security Agency(ENISA) has identified top 10 security risks including loss of governance, data protection, incomplete data deletion etc. [9]

1. Relevant and well-defined objective in collaboration with a clinician for developing AI for healthcare [10][11]:

Healthcare decisions are taken by clinicians. Thus, for developing AI tool, a relevant and well-defined research question is need to be identified in close coordination with clinician.

1. Data Quality and Parameters [10]:

Different clinicians have different way of analyzing. Thus, data parameters and data values may be different for similar healthcare cases[12]. There is a need to identify right data and its all possible synonyms to ascertain best data quality and parameters for developing AI tool.

1. Correct sample size of patients and their variables [10]:

Incorrect sample size of data may lead to false correlations[13]. The size calculation depends on alpha error, beta error, clinically meaningful difference, variability or standard deviation and include a safety margin[14].

1. Ethical issues and Regulations :

There are 17 principles mentioned in the “ICMR - National Ethical Guidelines For Biomedical And Health Research Involving Human Participants” [15]. According to Principle of essentiality, the use of human participants should be duly vetted by an ethics committee (EC) independent of the proposed research. According to Principle of professional competence, the AI tool must be developed in consultation with medical experts and contain accurate medical information. There is a need to follow all the guidelines related to Ethics issues before designing a research study.

1. Legal issues :

Legal issues need careful attention[16][17].

1. Right method and right technology for development of AI tool [10]:

It is observed that different technologies have different success rate for different type of research questions. One technology cannot be used for all research questions. The identification of correct method and correct technology is required [18][19][20][21].

**Call for Topic Group Participation in AI4H applications and platforms: Cloud-based Applications**

The International Telecommunication Union (ITU)/World Health Organization (WHO) Focus Group on “Artificial Intelligence for Health” (FG-AI4H; https://www.itu.int/go/fgai4h) seeks engagement from members of the medical and artificial intelligence (AI) communities to collaborate in development of Cloud based AI tools for Health.

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