



World Health Organization

Machine Learning (AI) in Healthcare



MMUNC I

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Welcome Message

Head Chair: *Aarav Bhagya*

Hey delegates! Welcome to MMUNC I's WHO Committee. I'm Aarav, and I will be serving as your head chair for this conference. I'm a senior at Foothill High, and I've been doing MUN for around 4 years now, my favorite conference being BruinMUN at UCLA. In my free time, I play tennis, go to concerts, and do whatever with friends. In this committee, we will be diving deeper into the role of Machine Learning in Healthcare, as artificial intelligence is becoming increasingly prevalent in today's world. We hope this background guide provides you all with a thorough understanding of the topic and prompts you to come up with new solutions. I hope you all have a great time in this committee, especially if this is your first conference! I can't wait to see what you all have in store.

Any questions, at any time - aaravbhagya@gmail.com

Vice Chair: *Shreya Rao*

I am your vice chair, Shreya, and I am excited to see the creativity and solutions you guys bring to the committee. In my free time, I enjoy playing word games, going on walks, and hanging out with friends. In this committee, we will be discussing the implementation of machine learning in Healthcare. This document is a guide to the basic information you need to come into the committee prepared. It has guidelines for

your basic research on the topic and probing questions to help delegates come up with unique and nuanced solutions. We highly recommend that delegates use external sources, including the ones at the bottom of this document, to further expand their knowledge on this topic. Looking forward to an amazing committee!

Please reach me at my email if you have any questions: srao73934@gmail.com

Vice Chair: *Sumedha Kumar*

Hi delegates, my name is Sumedha Kumar, and I am so excited to be your Vice Chair for MMUNC I WHO Committee! In my free time, I enjoy going out with friends, doing my own nails, and playing NYT games. I can't wait to see the thoughtful debate, creative ideas, and collaboration that each of you brings. I look forward to meeting all of you and seeing the engaging debate you'll bring to committee. Best of luck with your preparation, and I hope we have an exciting and memorable conference!

If you have any questions, feel free to send me an email: sumedhakumar2@gmail.com

Topic Background

Machine Learning (ML), a branch of Artificial Intelligence (AI), refers to computer systems that learn patterns from data and improve their performance without being explicitly programmed for every task. In healthcare, ML has become one of the fastest-growing technologies due to the rapid expansion of electronic health records (EHRs), medical imaging, wearable health devices, and genomic research. These large datasets allow ML algorithms to identify trends and make predictions that support healthcare professionals in diagnosing diseases, recommending treatments, and improving patient outcomes. As healthcare systems worldwide face rising costs, physician shortages, aging populations, and increasing demand for medical services, many governments and medical institutions are exploring ML as a tool to improve efficiency while maintaining high-quality care.

Machine learning is already transforming many areas of medicine. Hospitals use ML algorithms to analyze medical images such as X-rays, CT scans, and MRIs, helping physicians detect conditions including cancer, stroke, and heart disease more quickly and accurately. Predictive models can identify patients who are at a higher risk of developing complications, allowing doctors to intervene before conditions worsen. Pharmaceutical companies increasingly rely on ML to accelerate drug discovery by identifying promising compounds and reducing the time required for clinical research. Public health agencies also use ML to monitor disease outbreaks, predict the spread of infectious diseases, and allocate medical resources more effectively during public health emergencies.

The widespread adoption of ML offers significant opportunities for healthcare systems around the world. By automating repetitive administrative tasks, ML can reduce physician workload and improve hospital efficiency. Decision-support systems can help healthcare providers make faster, evidence-based clinical decisions while reducing the likelihood of human error. ML also has the potential to expand healthcare access in underserved and rural communities through telemedicine, remote patient monitoring, and AI-assisted diagnostic tools. Furthermore, advances in personalized medicine allow treatments to be tailored to an individual's genetics, medical history, and lifestyle, potentially improving treatment effectiveness while reducing unnecessary interventions.

Despite these advantages, the integration of ML into healthcare presents complex ethical, legal, and social challenges. Many ML models depend on large datasets that may not accurately represent diverse populations, leading to algorithmic bias and unequal healthcare outcomes across different racial, ethnic, gender, or socioeconomic groups. The collection and use of sensitive medical information also raise concerns regarding patient privacy, informed consent, cybersecurity, and data ownership. Additionally, many advanced ML systems function as "black boxes," meaning that healthcare professionals and patients may not fully understand how a particular recommendation or diagnosis was generated. This lack of transparency can reduce trust in AI-assisted healthcare and complicate questions of accountability when errors occur.

The international community also faces significant disparities in technological capacity and healthcare infrastructure. While high-income countries continue investing heavily in AI research and healthcare innovation, many low- and middle-income countries lack the digital infrastructure, funding, and trained workforce necessary to

implement ML technologies. Without international cooperation, these differences could widen existing global health inequalities rather than reduce them. As the leading international public health organization, the World Health Organization (WHO) works alongside United Nations agencies and Member States to promote responsible AI governance, encourage knowledge sharing, develop ethical standards, and ensure that machine learning technologies improve healthcare in a safe, equitable, and accessible manner for all populations. Delegates must consider how the global community can balance innovation with patient protection while ensuring that the benefits of machine learning are shared fairly across countries with different levels of development.

Past United Nations Action

In recent years, Artificial Intelligence has already been implemented in healthcare, helping doctors detect disease, communicate effectively with patients, and reduce administrative workload. However, despite these developments, Dr. Hans Kluge, WHO (World Health Organization) Regional Director for Europe, stated, “Without clear strategies, data privacy, legal guardrails, and investment in AI literacy, we risk deepening inequities rather than reducing them.”

Additionally, within a survey of 50 countries, only 4 were recognized for having a national strategy for implementing AI in healthcare. The World Health Organization urges countries to utilize AI for strategies that address public health goals [\[1\]](#).

Additionally, the United Nations is focused on creating an AI Resource Hub. The main focus of this Resource Hub is to leverage Artificial Intelligence across all departments and develop effective solutions [\[2\]](#). This Resource Hub has already been implemented, helping over 1000 activities across 193 countries [\[3\]](#).

The UN Resource Hub will continue helping new projects and developing further with the utilization of AI. Specialized organizations collaborate, such as ITU, WHO, and WIPO, announcing the AI for Good Global Summit and have further focused on scaling AI in healthcare spaces. The purpose of this collaboration is to maximize the potential of AI in its capability to support treatment and diagnosis as well as provide efficient healthcare services. The global initiative aims to develop policy guidelines and facilitate knowledge and data sharing regarding decisions on AI solutions in health.

The open-code programme that is affiliated with this initiative has allowed experts around the world to collaborate and develop innovative AI solutions for health.

The goal for this initiative in the future is to gain the trust of healthcare professionals, eventually to establish AI solutions in in-person clinics. Furthermore, scaling the program will enable AI solutions for health to be implemented in lower- and middle-income countries [\[4\]](#).

Questions to Consider

These are helpful questions to encourage thinking. THEY DO NOT NEED TO BE ANSWERED!

1. How can countries make sure ML tools are used equally when treating patients when the data used to train them often underrepresents certain racial and socioeconomic groups?
2. Who should be held responsible when an ML system makes an incorrect diagnosis or recommended course of action? (Doctor, hospital, software developer, etc.)
3. How can patient privacy be balanced with efficiency when ML systems need large amounts of sensitive data to function properly?
4. What role should international organizations like the WHO play in helping lower-income countries gain access to ML healthcare without reliance on wealthier nations and private corporations?
5. Should doctors and patients have the right to know how an ML system reached its conclusion? How do we handle “black box” systems that have concealed data?
6. How can the global community build trust in AI-assisted healthcare among doctors and patients?

Country List

USA, Canada, Mexico, Brazil, Argentina, Chile, Colombia, Peru, UK, France, Germany, Spain, Italy, Poland, Sweden, Norway, Turkey, Russia, Ukraine, China, Japan, South Korea, India, Pakistan, Bangladesh, Sri Lanka, Indonesia, Philippines, Vietnam, Egypt, Morocco, Nigeria, Ghana, Kenya, Ethiopia, South Africa, Saudi Arabia, Iran, Israel

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