Journal of Information System and Technology, Vol.05 No. 01, Mar 2024, pp. 19-22
ISSN : 2541-5867
DOI : 10.37253/joint.v5i1.4293

Contents list available at https://journal.uib.ac.id/
JOINT
(Journal of Information System and Technology)
journal homepage: https://journal.uib.ac.id/index.php/joint/

Implementing Artificial Intelligence as Virtual Assistant for Medical Diagnosis

Alvi Geovanny[1], Giovanno Estevan[2], Infrisanti Wilson Tong[3], Jason Aaron Louis[4], Vincent Octarian Vianto[5]
[1,2,3,4,5]Universitas Internasional Batam
Email: 1931143.alvi@uib.edu, 1931040.giovanno@uib.edu, 1931079.infrisanti@uib.edu, 1931090.jason@uib.edu, 1931098.vincent@uib.edu

Abstract

Artificial intelligence (AI) is wide-ranging division of computer science concerned with building sharp machines competent of performing errands that frequently require human bits of knowledge. AI is an interest science with various approaches, but movements in machine learning and significant learning are making a worldview move in basically each division of the tech industry. AI can we implemented as virtual assistant to help patients to identify their illness and suggest whether the patient needs a medication or further diagnosis directly by doctors. Virtual assistant can reduce unnecessary physical meetings between doctors and patients, especially for infectious diseases such as COVID-19.

Keywords:

I. INTRODUCTION

The most important general-purpose technology of our era is artificial intelligence, particularly machine learning (ML) — that is, the machine's ability to keep improving its performance without humans having to explain exactly how to accomplish all the tasks it's given (Brynjolfsson & McAfee, 2017).

One of the applications of machine learning (ML) is natural language processing (NLP) which can be developed into intelligent virtual assistant (IVA) (Wikipedia, 2020). Intelligent virtual assistant (IVA) is a service to interact with users based on voice command (Chung & Lee, 2018).

The most used intelligent virtual assistants are Apple Siri, Microsoft Cortana, Google Assistant, and Amazon Alexa (Gadgets 360, 2019).

Indonesia has the lowest number of physicians (medical doctors) per 1000 people of the top five most populated countries in the world (the World Bank Group, 2020).

Especially in this pandemic situation, the shortage of doctors is more pronounced. As of 22 November 2020, COVID-19 has killed 168 doctors in Indonesia, to make the condition even worse (Kompas.com, 2020).

For some cases, to get an appointment with a doctor, patients must wait in line for hours, and for some cases, for months. This is a serious issue, especially for patients with acute diseases (Agustiyanti, 2020; Dental.id, 2020; Dewi, 2020; Kuncoro, 2020; Sisca, 2020).

II. METHOD

The method to develop an intelligent virtual assistant for medical diagnosis is to train a machine learning model for natural language processing.

There are three categories that most AI use cases and emerging applications:

1. Medical Record Navigation: Search, analyze, and record clinical data automatically using machine learning.
2. Medical Transcription: Transcribe clinical data recorded during patient visits.
3. Medical Information Search: Using machine learning algorithms for chatbots to deliver searches for medical information (Sennaar, 2019).

III.RESULTS AND DISCUSSION

With the help of natural language processing, this AI can accurately give insights in understanding problems and better results for patients. By using machine-learning algorithms, it can uncover diseases that have not previously been found.

The accuracy of the AI will increase along with the volume of data available for learning. The more common the platform is used, the more accurate the information the AI in healthcare gets, since it's always learning.

The AI can also interpret speech and update records. This allows physicians or doctors to make notes while talking to patients, avoiding duplication, and allowing more time for them to deal with the patients. It can also interpret clinical notes with the help of extraction from diagnostic reports and doctors' letters, which then ensures the accuracy of the patient's health profile (ForeSee Medical Inc, 2020; Gupta, 2020).

IV. CONCLUSION

Thus, we know that the development of technology has been very sophisticated, for example is Artificial Intelligence. Artificial Intelligence has many roles with their own impact. By knowing the role of artificial intelligence, it can provide changes in various fields, one of which is related to the number of doctors in the world. Quite a significant comparison between the number of doctors and the number of existing populations. Indonesia is the country that has the fewest

doctors among the 5 countries with the most population. Therefore, Artificial Intelligence such as the Apollo project can provide a sufficiently appropriate solution to solve the problem.

V. REFERENCES

Agustiyanti. (2020). *Suara Resah Peserta BPJS Kesehatan jika Iuran Kelas I Naik 100% - Keuangan Katadata.co.id*. Katadata. https://katadata.co.id/agustiyanti/finansial/5e9a5032674d0/suara-resah-peserta-bpjs-kesehatan-jika-iuran-kelas-i-naik-100

Brynjolfsson, E., & McAfee, A. (2017). How AI fits into your science team: What it can — and cannot — do for your organization. *Harvard Business Review*, 1–20. https://hbr.org/cover-story/2017/07/the-business-of-artificial-intelligence

Chung, H., & Lee, S. (2018). Intelligent virtual assistant knowsyour life. *ArXiv*, 1–6.

Dental.id. (2020). *Kadang Saya Suka Kasian Sama Dokter Bedah – dental.id*. Dental.Id. http://dental.id/kadang-saya-suka-kasian-sama-dokter-bedah/

Dewi, A. P. W. (2020). *Perjuangan Panjang dan Melelahkan Pasien BPJS Kesehatan Mendapatkan Haknya – Soloensis*. Soloensis. https://www.soloensis.com/27/12/2016/perjuangan-panjang-dan-melelahkan-pasien-bpjs-kesehatan-mendapatkan-haknya-1639.html

ForeSee Medical Inc. (2020). *Natural Language Processing in Healthcare Medical Records*. ForeSee Medical Inc. https://www.foreseemed.com/natural-language-processing-in-healthcare

Gadgets 360. (2019). *Apple's Siri the Most Popular Virtual Assistant With a 35 Percent Market Share: Report | Technology News*. https://gadgets.ndtv.com/smart-home/news/apple-siri-leads-virtual-assistant-market-share-alexa-google-assistant-cortana-report-2151436

Gupta, R. (2020). *Natural Language Processing in Healthcare – TDAN.com*. The Data Administration Newsletter, LLC. https://tdan.com/natural-language-processing-in-healthcare/24538

Kompas.com. (2020). *Update: 168 Dokter di Indonesia Meninggal akibat Virus Corona Halaman all - Kompas.com*. https://www.kompas.com/tren/read/2020/11/22/203300165/update-168-dokter-di-indonesia-meninggal-akibat-virus-corona?page=all

Kuncoro, S. (2020). *Pasien Juga Harus Memahami Dokter Di Era BPJS - Pasien Sehat*. PASIEN SEHAT. http://www.pasiensehat.com/2015/05/pasien-juga-harus-memahami-dokter-di-era-bpjs.html

Sennaar, K. (2019). *AI for Virtual Medical Assistants – 4 Current Applications | Emerj*. Emerj Artificial Intelligence Research. https://emerj.com/ai-sector-overviews/virtual-medical-assistants/

Sisca. (2020). *Kesalahan Petugas BPJS Merugikan Konsumen - Media Konsumen*. Media Konsumen. https://mediakonsumen.com/2016/03/16/keluhan/kesalahan-petugas-bpjs-merugikan-konsumen the World Bank Group. (2020). *Physicians (per 1,000 people) - Indonesia | Data*. https://data.worldbank.org/indicator/S

H.MED.PHYS.ZS?locations=ID

Wikipedia. (2020). *Machine learning - Wikipedia*. https://en.wikipedia.org/wiki/Machine_learning