

INDOSTAFF IN COLLABORATION WITH
DERAP PEREMPUAN KREATIF INDONESIA PEDULI BANGSA (DPKIPB)
AND THE FACULTY OF MEDICINE, UNIVERSITY OF SAM RATULANGI
PRESENT

"HARNESSING GENERATIVE AI (GEN AI) FOR FOSTERING LEARNING PROCESS IN HIGHER EDUCATION"

ORGANIZED BY



WELCOME ADDRESS BY THE ORGANIZING COMMITTEE

SUPPORTED BY



Prof. Dr. Ir. Hj. Nurhayati, M.Sc.agr
Presidium of Indostaff



Prof. Dr. Illah Sailah, M.S
Derap Perempuan Kreatif
Indonesia Peduli Bangsa.



Prof. Dr. Ir. Oktovian Berty Alexander Sompie, M.Eng
Rector of University of Sam Ratulangi

KEYNOTE SPEAKER



Prof. Dr. Ir. Sri Suning Kusumawaradani, S.T., M.T.
Direktur Pembelajaran dan Kemahasiswaan
Direktorat Jenderal Pendidikan Tinggi, Riset, dan Teknologi

SPEAKERS



Fariz Darari, S.Kom., M.Sc., Ph.D.
Associate Professor, Faculty of
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Dr. med. Abraham Simatupang, MD., MKes
Associate Professor, Faculty of
Medicine, Universitas Kristen
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CLOSING SPEECH



Prof. Dr. dr. Nova Hellen Kapantow, DAN, MSc, SpGK
Dean of Faculty of Medicine,
University of Sam Ratulangi

Free
Registration



March 7
2024
13.00 WIB - selesai



Registration Link
sl.unsrat.ac.id/WebinarGenAI

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Derap Perempuan Kreatif
Indonesia Peduli Bangsa
DPKIPB

GenAI for medical education and healthcare*

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*Indostaff Webinar on "Harnessing Generative AI (GenAI) for Fostering Learning Process in Higher Education"
7th March 2024

Outline

- History of Medical Education, Research and Healthcare
- History of AI in medical world
- What is AI and GenAI
- GenAI for (medical) education
- GenAI for Healthcare system
- Challenges of GenAI for (medical) education and Healthcare system

“The rise of powerful AI will be either the best, or the worst thing, ever to happen to humanity” —Stephen Hawking

History of Medical Education, Research and Healthcare – at a glance

- Tiny parts of history of medicine: from purely empirical and “by accidental” findings and practices, and sometimes “cruel” (WW II) to highly and robust evidence based experiments, pre- and clinical trials.
- Louis Pasteur identified germs as cause of disease, Alexander Fleming “accidentally” found antibiotic penicillin to William Osler created the modern system of medical education to the Evidence-Based Medicine (EBM) movement that gave us the ability to deal with the explosion of published evidence.
- In recent decades the development of medical education and health services has been supported by developments in biotechnology and ICT.

“Observe, record, tabulate,
communicate. Use your five senses.
Learn to see, learn to hear, learn to
feel, learn to smell, and know that by
practice alone you can become expert.-
Sir William Osler (July 12, 1849 - December 29,
1919)



Primum non nocere
First do no harm



Benefit-risk management

Decision-making process

Therapy-Interventions

- Diagnosis/
- Working Diagnosis/
- Differential Diagnosis

Synthesis Analysis

Critical thinking

Additional examinations

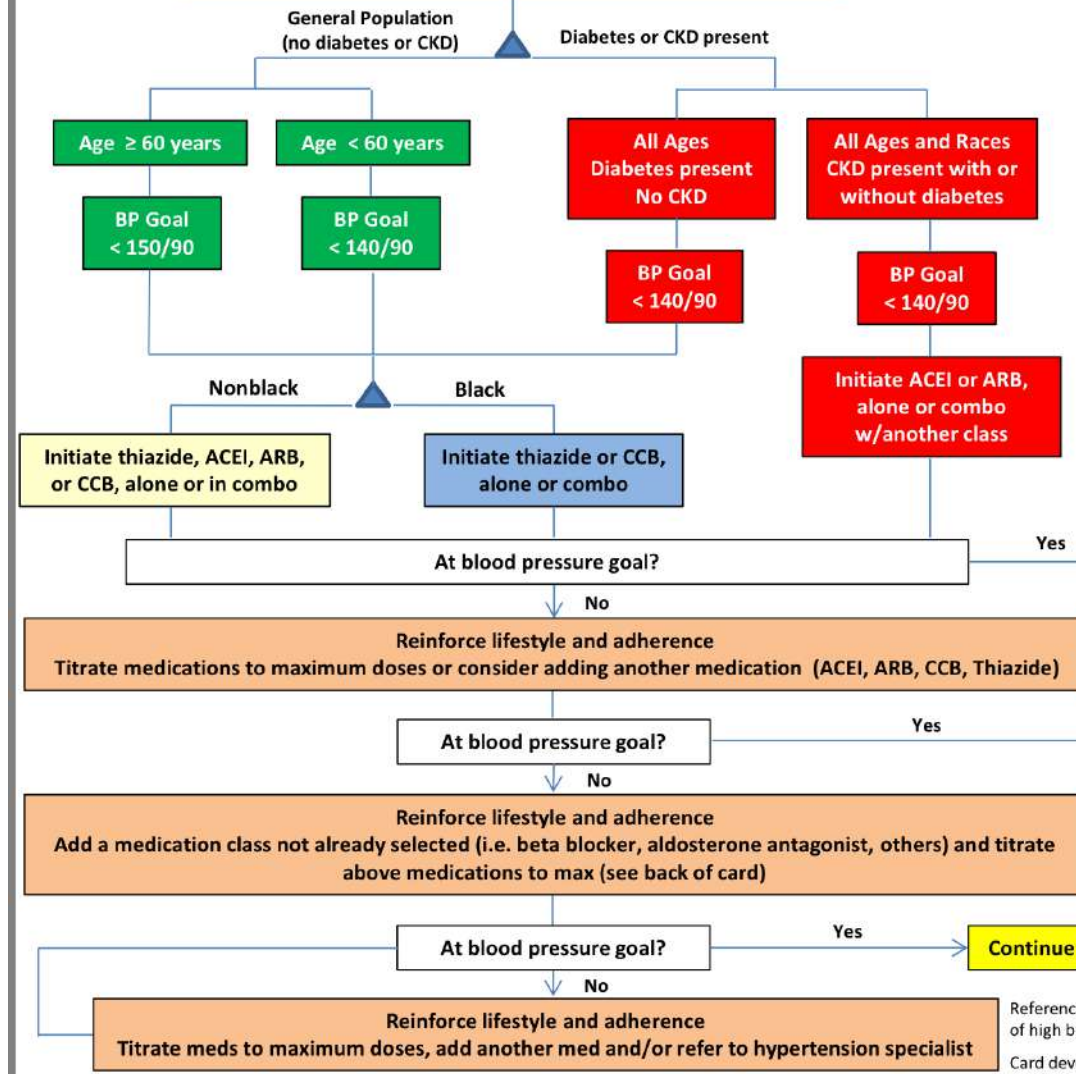
Physical Examination

Anamnesis/History Taking

Data gathering

Algorithm of Hypertension therapy

Adult aged ≥ 18 years with HTN
Implement lifestyle modifications
Set BP goal, initiate BP-lowering medication based on algorithm



- Initial Drugs of Choice for Hypertension**
- ACE inhibitor (ACEI)
 - Angiotensin receptor blocker (ARB)
 - Thiazide diuretic
 - Calcium channel blocker (CCB)

Strategy	Description
A	Start one drug, titrate to maximum dose, and then add a second drug.
B	Start one drug, then add a second drug before achieving max dose of first
C	Begin 2 drugs at same time, as separate pills or combination pill. Initial combination therapy is recommended if BP is greater than 20/10mm Hg above goal

- Lifestyle changes:**
- Smoking Cessation
 - Control blood glucose and lipids
 - Diet
 - ✓ Eat healthy (i.e., DASH diet)
 - ✓ Moderate alcohol consumption
 - ✓ Reduce sodium intake to no more than 2,400 mg/day
 - Physical activity
 - ✓ Moderate-to-vigorous activity 3-4 days a week averaging 40 min per session.

Reference: James PA, Ortiz E, et al. 2014 evidence-based guideline for the management of high blood pressure in adults: (JNC8). JAMA. 2014 Feb 5;311(5):507-20
Card developed by Cole Glenn, Pharm.D. & James L Taylor, Pharm.D.

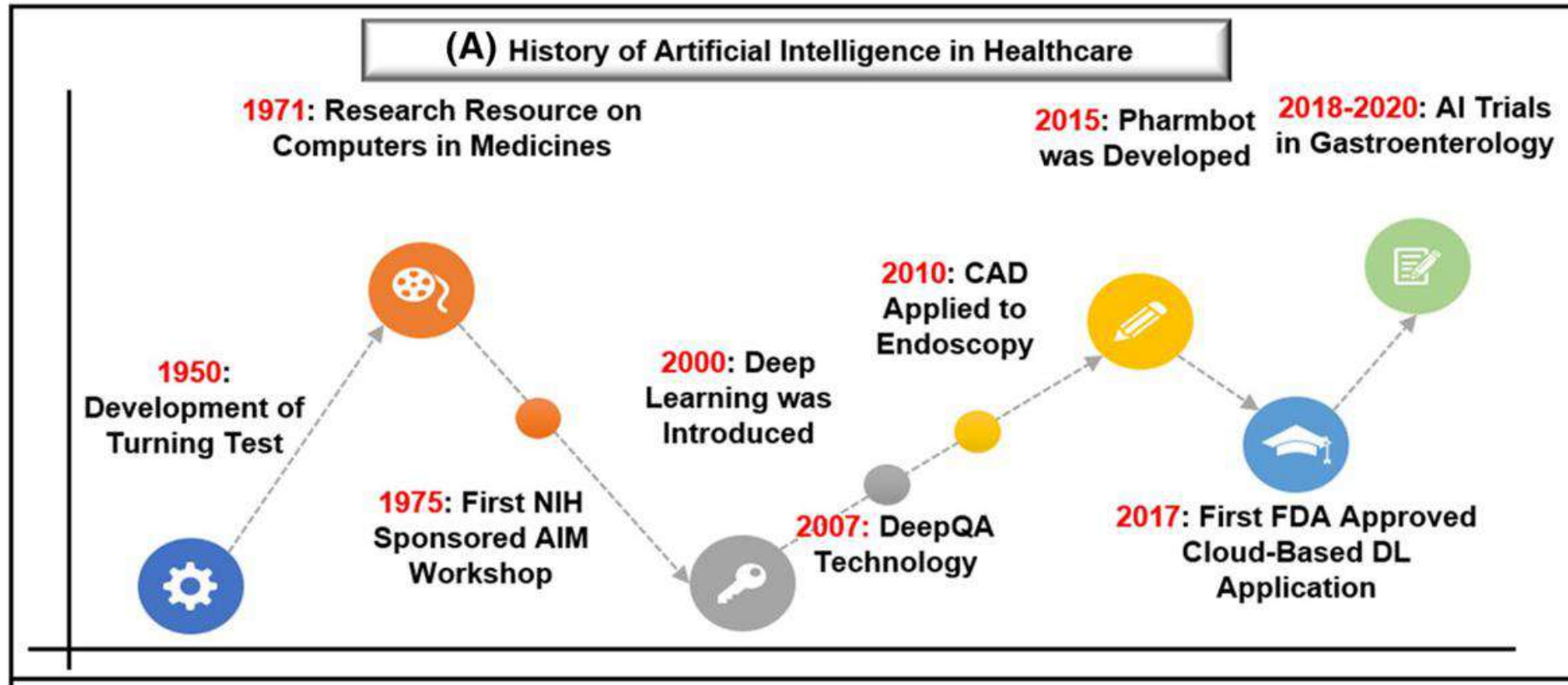
Data ecosystem for health informatics



“It’s about Knowledge Management and a sprinkle of human touch”



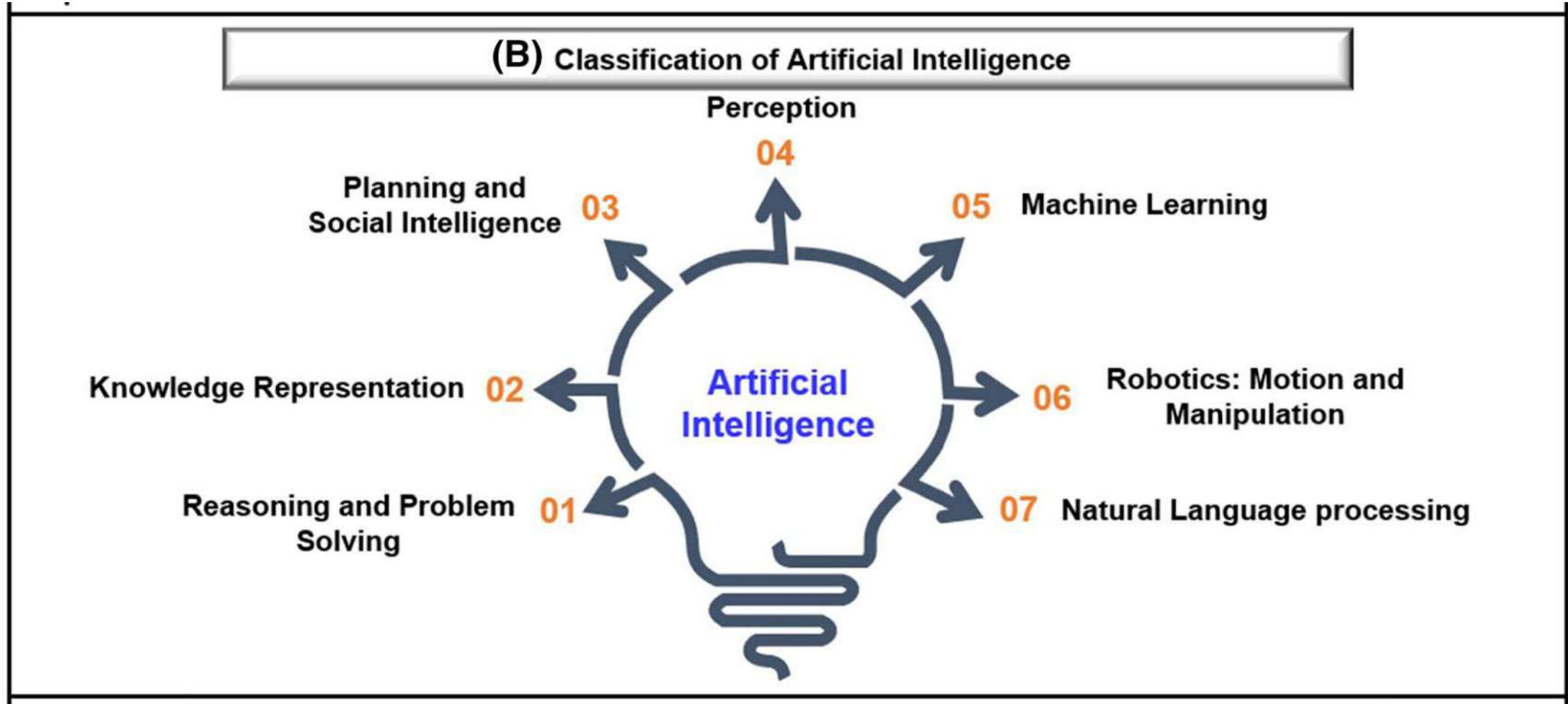
History of AI in medical world



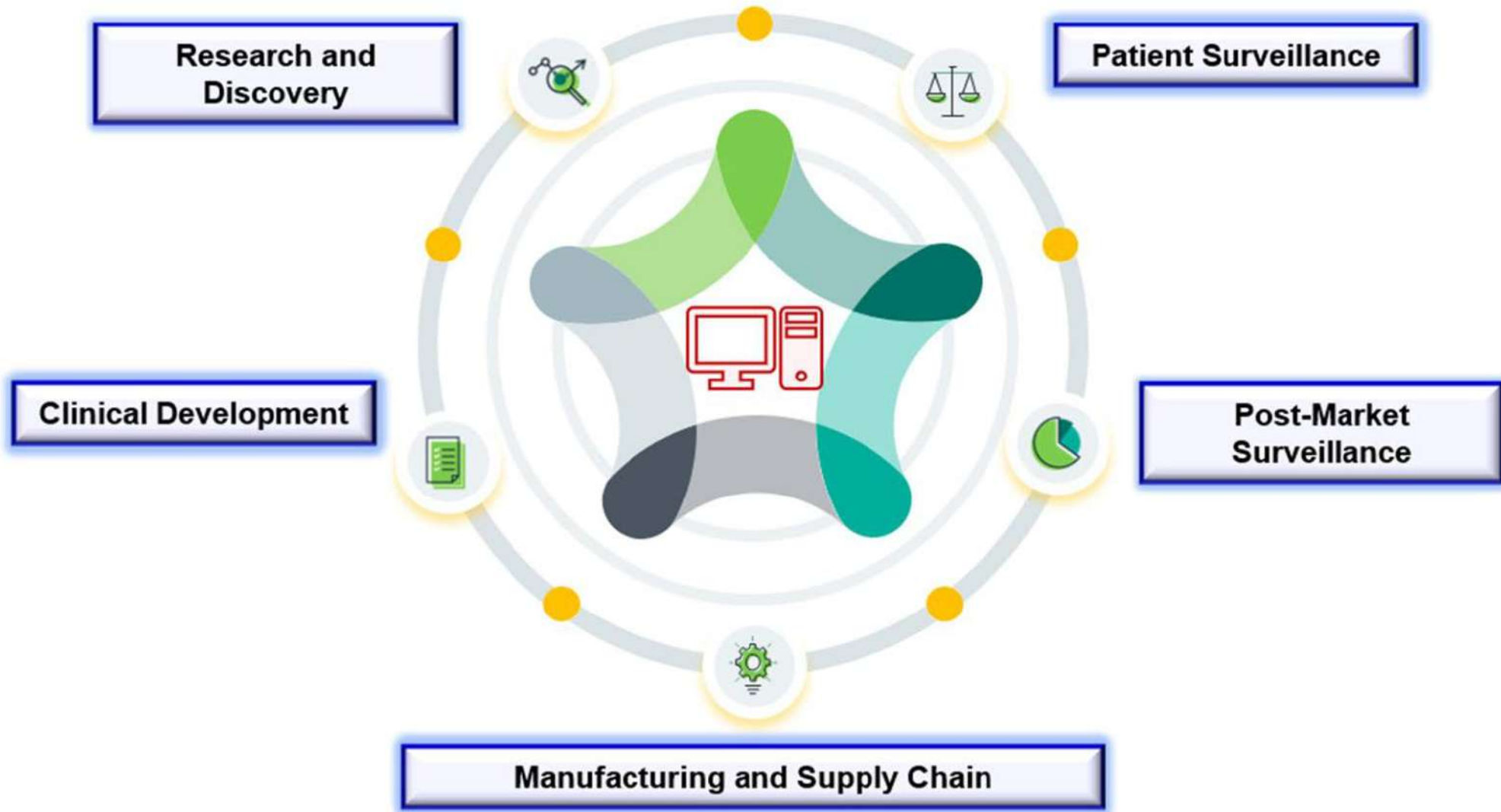
Trending topics and issues related to AI:

- Machine Learning (ML), Deep Learning (DL), Augmented Intelligence (AI atau AuI) and Artificial General Intelligence (AI atau AGI)

History of AI in Health care



(C) Artificial Intelligence in Healthcare and Pharmaceutical Industry




AI and GenAI

- Generative Artificial Intelligence (GenAI or GAI): capable of generating new data such as text, images, or other forms of data.
- It learns the patterns and structure of their input training data and then generate new data that has similar characteristics. Example: Large Language Models (LLM).
- Application: wide range industries: software development, healthcare, finance, finance, entertainment, customer service, etc.
- Examples: ChatGPT, Copilot, Gemini, LLaMa, Stable Diffusion-MidJourney-DALL-E (text-to-image AI art system)

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 You

Generative AI and medical education



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Generative AI, such as large language models like ChatGPT, can offer a positive paradigm shift in medical education ¹. Here are some ways generative AI can be applied in medical education:

1. **Case-Based/Problem-Based Learning (CBL/PBL):** Generative AI can augment the existing paradigm to work in conjunction with the clinical-teacher in PBL/CBL case generation ¹. It can develop realistic patient cases that could be revised by clinical teachers to ensure accuracy and relevance ¹.
2. **Alignment with Learning Objectives:** Generative AI can be directed to include specific case content in order to facilitate the constructive alignment of the case with the broader learning objectives of the curriculum ¹.
3. **Engagement:** There is also the possibility of improving engagement by 'gamifying' CBL/PBL ¹.
4. **Personalized Education:** Generative AI can produce patient-specific educational materials that are tailored to their unique needs, helping patients better understand their medical conditions and improve adherence to treatment ².
5. **Simulations and Digital Patients:** Generative AI presents significant opportunities for enhancing medical education, including the provision of realistic simulations, digital patients, personalized feedback, evaluation methods, and the elimination of language barriers ³.

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Ask me anything...



0/4000



Real patient vs Standardized patient vs Virtual patient

Real patient

- Depends on the availability of real patients
- Students experience real things, especially emotional-psychological aspects → pain, fear, stress
- Experience and learn empathy
- Communication & Education

Standardized Patient

- Quite easy to “develop” case
- Restricted experience on learning for five-senses
- Learning for empathy
- Can not replace hands-on clinical experience
- Communication & education

Virtual Patient

- Easy to “develop” case with GenAI
- No experience on learning for five-senses
- Less experience on empathy
- “Robotic-communication”
- Can not replace hands-on clinical experience



Mannequin for hands-on skill training

It's important to note that while generative AI can offer valuable support in medical education, it should complement traditional teaching methods and not replace hands-on clinical experience.

The potentials of Generative AI to revolutionize the healthcare system:

- **Clinical documentation** (patient interactions transformed into clinician notes in seconds)
- **Data analysis** (analyze unstructured data sets such as clinical notes, diagnostic images, medical charts, and recordings → breakthrough in healthcare operations)
- **Risk prediction** (patterns of genetic, environmental, and lifestyle factors → predicts an individual's/population's risk for specific conditions)
- **Patient engagement** (ground-breaking discoveries by scientists, medical researchers, healthcare professionals → elevate patient care, leveraging vast datasets, modelling complex biological systems)
- **Efficiency and Quality of Care** (increase efficiency, improve quality care, create value for health care organizations → Example: what is the most cost-effective treatment for hypertension?)

IBM Watson Oncology and Memorial Sloan Kettering Cancer Center

- System analyzes a patient's medical record to help identify evidence-based and personalized treatment options for a limited number of malignant disorders.
- The system claims to data mine the patient's entire electronic medical record (EMR), as well as treatment guidelines provided by physicians at Memorial Sloan Kettering and select peer-reviewed literature (text books and medical journals; a total 15 million pages of text). A patient chart is created by the AI, and the patient's physician is asked to verify the data displayed therein.
- The AI system then analyzes the data and compiles a prioritized list of treatment options divided into the categories "recommended," "for consideration," and "not recommended".

Personalised medicine

Wang-Chuan Juang et al, 2022

Informed decision:

- (Tailored) Treatment options
- Improvement of outcomes

Recent & Past lab findings

Past diseases & treatments

Genetic makeup

Family-inherited diseases (?)

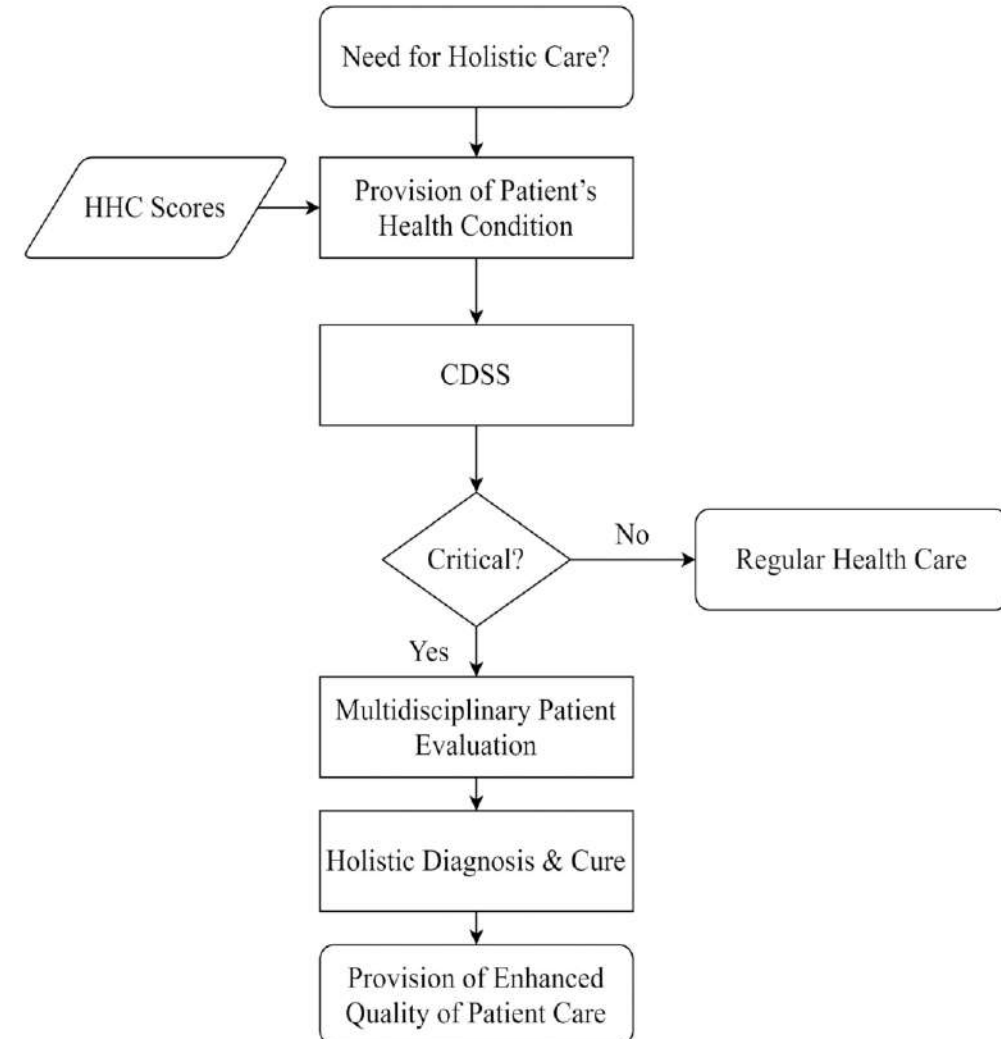
GenAI

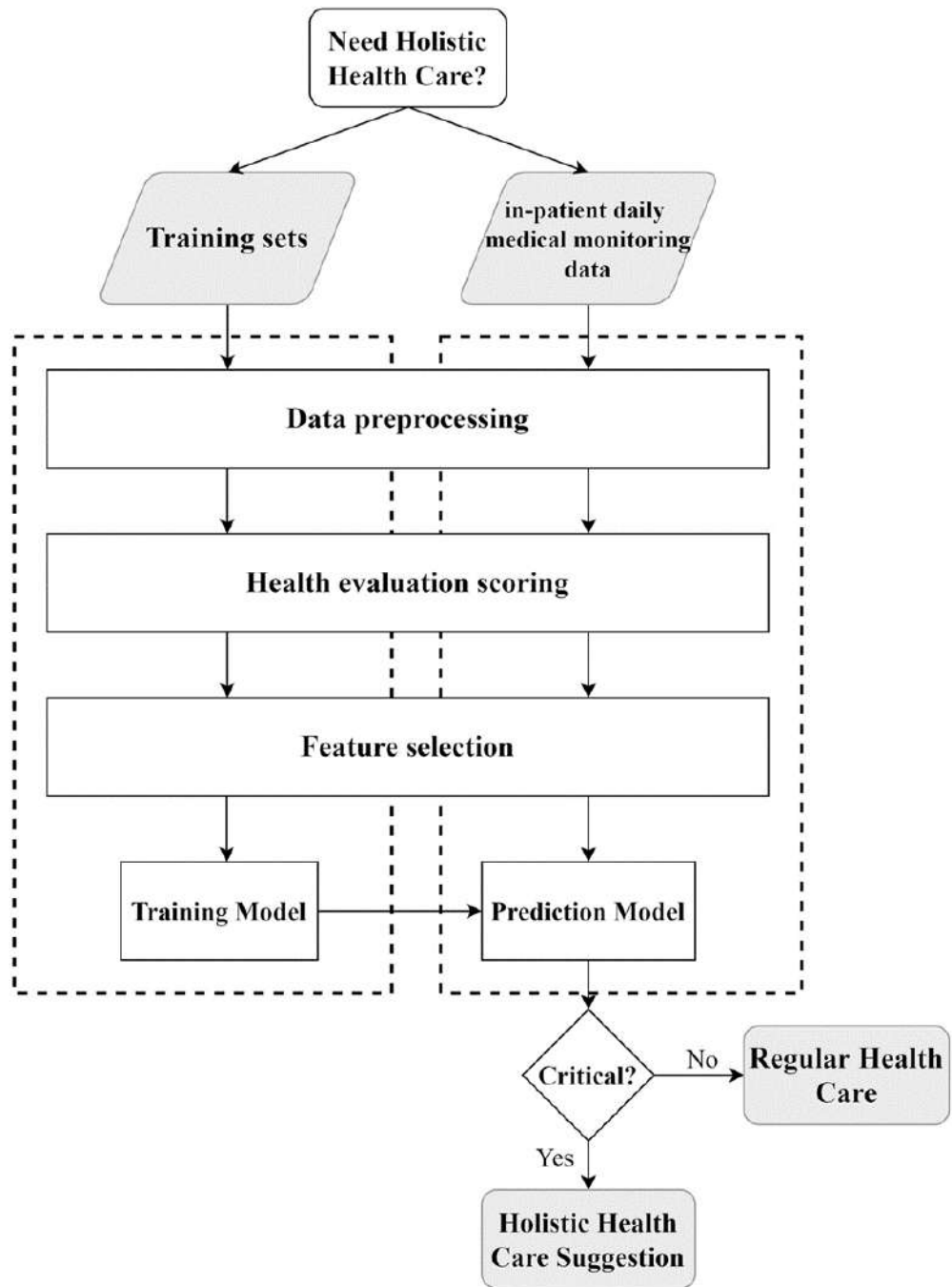
Lifestyles



Developing an AI-assisted clinical decision support system to enhance health care (Taiwan)

- The rules in the CDSS are defined by a group of physicians from multiple departments, which attempt to mimic the experts make HHC decisions. **However, the rule-based CDSS could not predict HHC efficiently as expected.**
- 121.000 in-patient cases and 890.000 MRs (2017-2019) were referenced dedicated to training and evaluation, where the dataset after the holistic care service has been deployed in the hospital and the HHC patients were verified manually by physicians.
- Cross-validation tests were performed to eliminate the overfitting issue, where different portions of training and testing were evaluated.





- Comparing with the rule-based expert system, the proposed AI-assisted CDSS improves sensitivity from 26.44% to 80.84% and specificity from 99.23% to 99.95%.
- The experimental results demonstrate that an AI-assisted CDSS could efficiently predict HHC patients.

PubMed® Artificial Intelligence AND Health care system

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RESULTS BY YEAR

1966 2015 2024

8 articles found by citation matching

An Artificial Intelligence-Based Reactive Health Care System for Emotion Detections
 Mohammad GB, et al. Comput Intell Neurosci. 2022. PMID: 35634063 Free PMC article.

Revolutionising Impacts of Artificial Intelligence on Health Care System and Its Relation to Medical In-Transparencies.

Accessed at 28 Feb. 2024

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RESULTS BY YEAR

1966 2024

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An Artificial Intelligence-Based Reactive Health Care System for Emotion Detections
 Mohammad GB, et al. Comput Intell Neurosci. 2022. PMID: 35634063 Free PMC article.

Revolutionising Impacts of Artificial Intelligence on Health Care System and Its Relation to Medical In-Transparencies.
 Saadat A, et al. Ann Biomed Eng. 2023. PMID: 37548817

Accessed at 6 March 2024

PubMed® Artificial Intelligence AND Medical Education

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MY NCBI FILTERS 6,661 results

RESULTS BY YEAR

1964 2017 2024

Assessing the role of GPT-4 in thyroid ultrasound diagnosis recommendations: enhancing interpretability with a chain of prompts

1 Wang Z, Zhang Z, Traverso A, Dekker A, Qian L, Sun P. Quant Imaging Med Surg. 2024 Feb 1;14(2):1602-1615. doi: 10.21037/qims-23-1000. PMID: 38415150 Free PMC article.

BACKGROUND: As artificial intelligence (AI) becomes increasingly prevalent in medical education, the effectiveness of AI-generated medical reports in disease diagnosis remains to be evaluated. ...Our proposed online platform, "ThyroAIGuide", alongside ...]

MY NCBI FILTERS 6,708 results

RESULTS BY YEAR

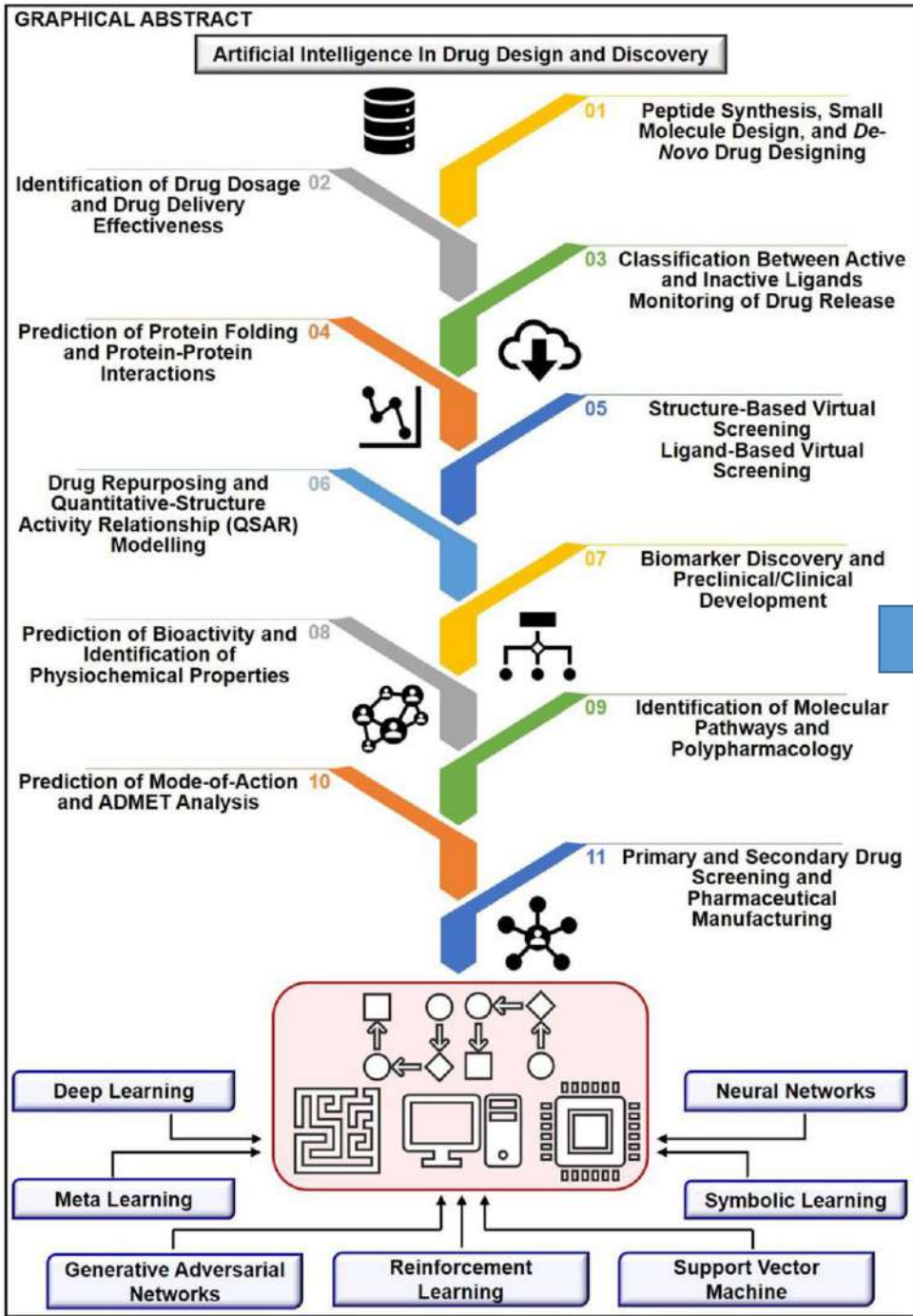
1964 2024

ChatGPT in Head and Neck Oncology-Opportunities and Challenges.

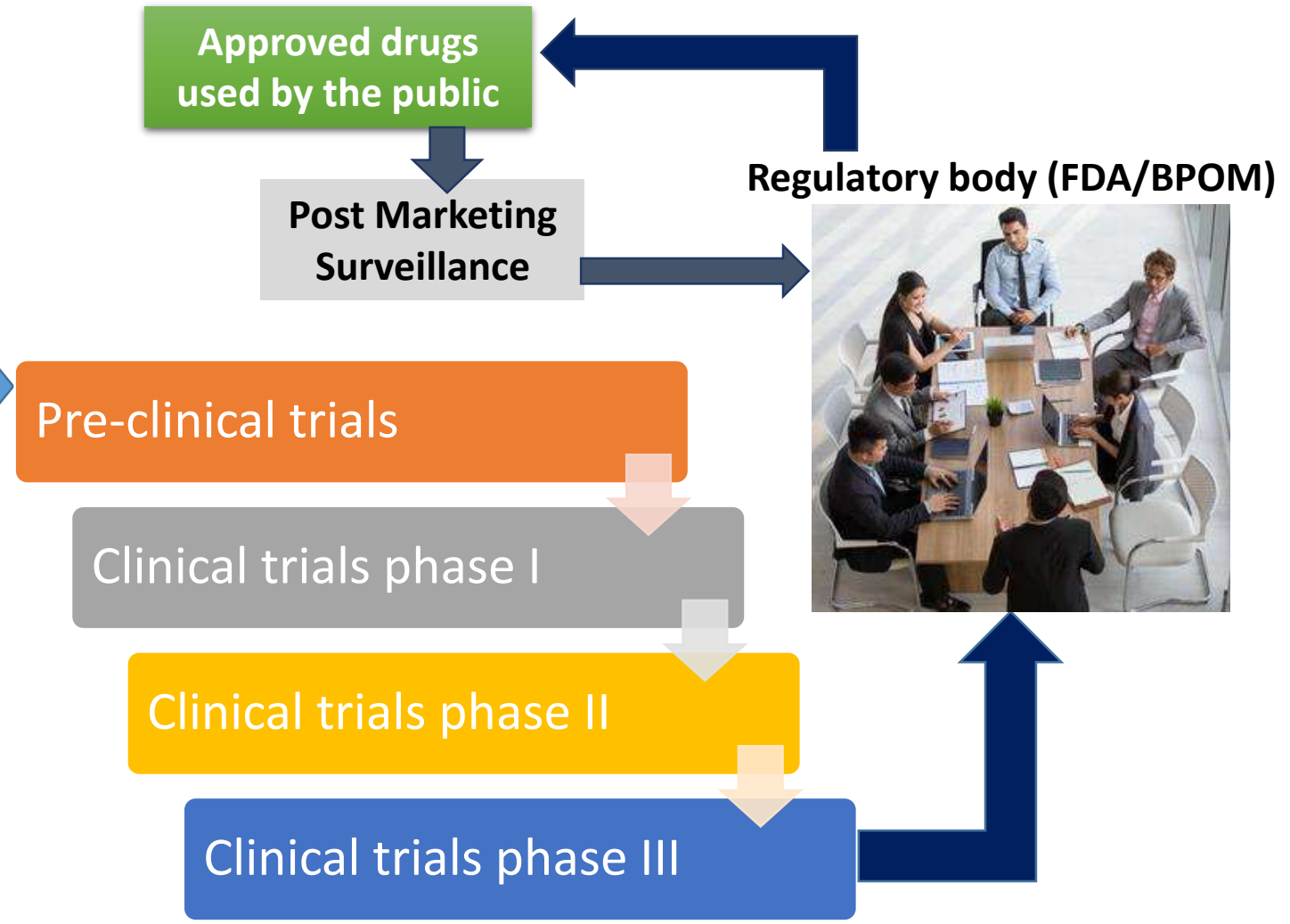
1 Sarma G, Kashyap H, Medhi PP. Indian J Otolaryngol Head Neck Surg. 2024 Feb;76(1):1425-1429. doi: 10.1007/s12070-023-04201-6. Epub 2023 Aug 31. PMID: 38440617

Head and neck oncology represents a complex and challenging field, encompassing the diagnosis, treatment and management of various malignancies affecting the intricate anatomical structures of the head and neck region. With advancements in artificial intelligence (AI)...

Exponential growth of articles related to medical education and health services



AI in drug discoveries



Gupta R, et al (2021)

1st Robodoc (1992)

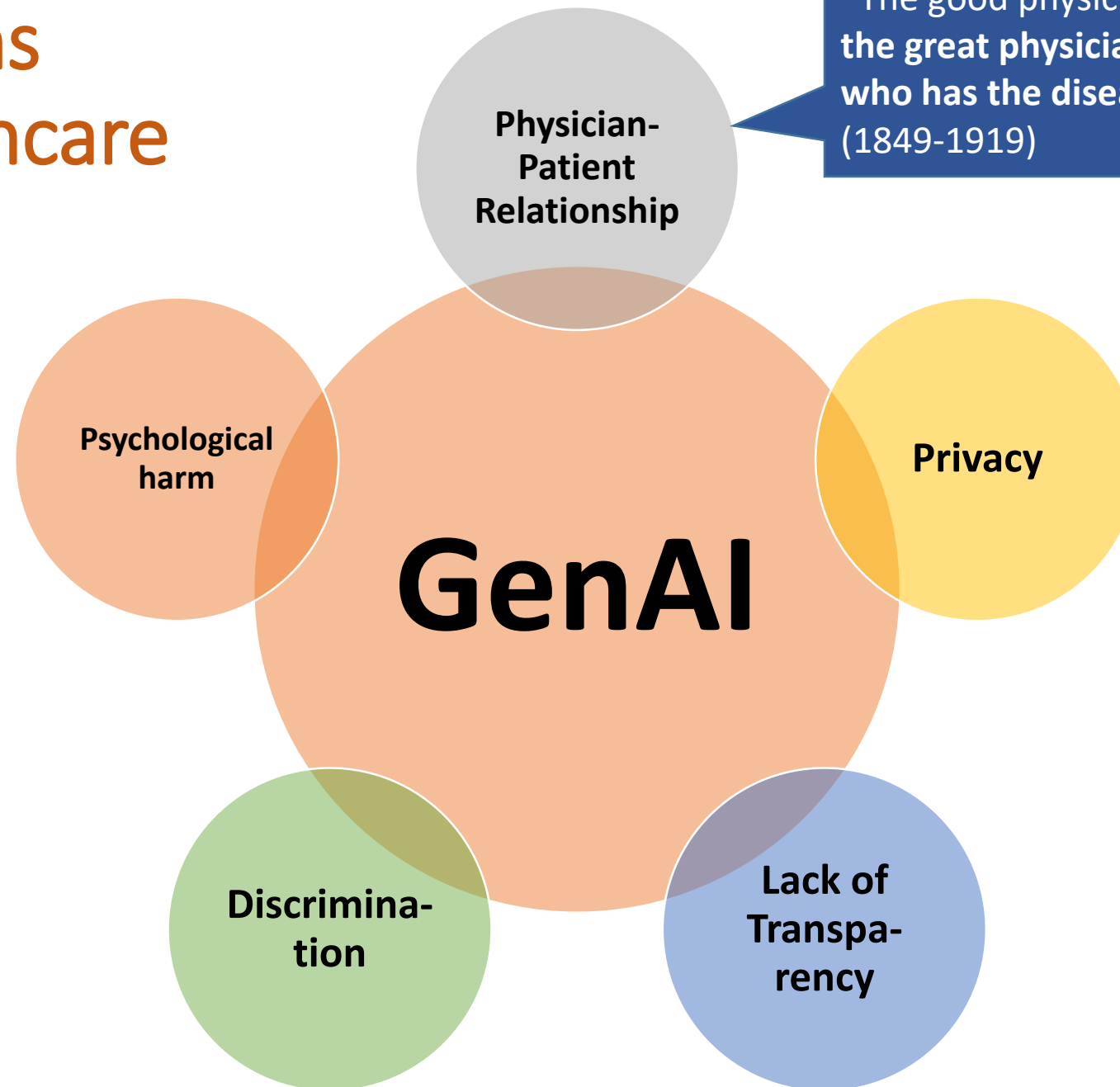
Dr. William Bargar



AI-assisted robotic surgery

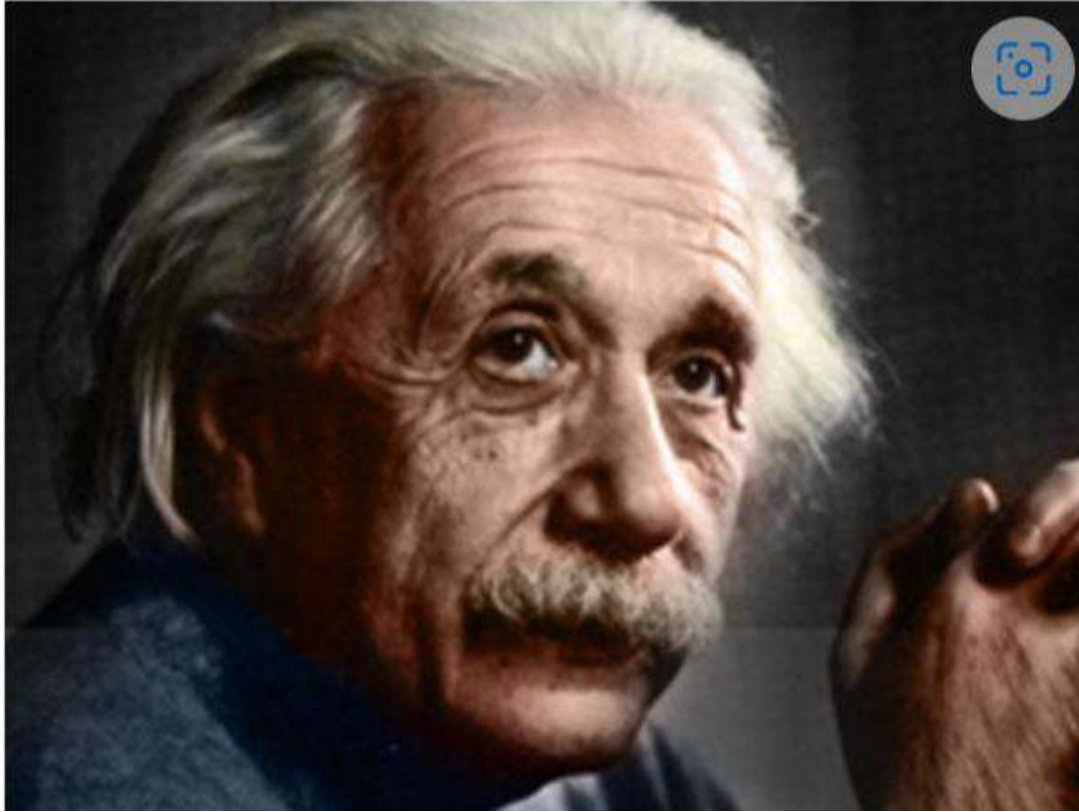


Ethical concerns GenAI in Healthcare



“The good physician treats the disease; the great physician treats the patient who has the disease.” Sir William Osler (1849-1919)

Some remarks...



- **AI systems are still inferior to the human brain when it comes to tasks that require human life experience, including input from emotions and perceptions by a physical body.**
- **They are already widely superior in many respects such as processing speed, capacity to accumulate large amounts of data, ability to recall results of previous calculations, and to operate without interruption in function or interference in performance by emotions, bias, irrational impulses, or morality (Svensson & Jotterand, 2022)**

Take Home Messages

- AI is becoming the **major driver of change in medical care, research and education.**
- Physicians as a profession need **to be active leaders and participants** in this technology-driven transformation in order to ensure that the potential to dramatically improve health care is fulfilled. Doctors as co-designers and active users of AI
- In a complex adaptive system such as healthcare, human-AI intelligent caring will need to be implemented, not as an ideology, but through **strategic choices, incentives, regulation, professional education, and training**, as well as through joined up thinking about human-AI intelligent caring.
- Access to care combined with speed and accuracy of diagnosis and treatment is a critical factor for this willingness to consider benefits as outweighing risks.
- Will AI diminish the role of doctors? Will computers be the ones to make predictions, diagnoses and treatment suggestions, so that doctors simply implement the computers' instructions? How will patients feel about their doctors if computers have a greater say in making medical determinations?
- **How we implement these breakthrough of (medical) education and healthcare system in Indonesia?**

Daftar Bacaan

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- Svensson AM, Jotterand F. Doctor Ex Machina: A Critical Assessment of the Use of Artificial Intelligence in Health Care. *The Journal of Medicine and Philosophy*, 47: 155–178, 2022 <https://doi.org/10.1093/jmp/jhab036>.

Thank you – Vielen dank für Ihre Aufmerksamkeit

Medicine is not merely a science but an art. The character of the physician may act more powerfully upon the patient than the drugs employed (Paracelsus)

WHEREVER THE ART
OF MEDICINE IS LOVED,
THERE IS ALSO A
LOVE OF HUMANITY.
(HIPPOCRATES)



Rundown Webinar
Harnessing Generative AI (GenAI) for Fostering Learning Process
in Higher Education"

Hari Kamis, tanggal 7 Maret 2024

1. Opening Remarks, introduction to the webinar's theme and objectives by MC: dr. Olivia Waworuntu, MPH. (FK UNSRAT)
2. Welcome address by the organizing committee:
 - Presidium of Indostaff (5 minutes) : Prof. Dr. Ir. Hj. Nurhayati, M.Sc.agr
 - DPKIPB (5 minutes) : Prof. Dr. Illah Sailah, MS
 - Rector of UNSRAT (5 minutes) : Prof. Dr. Ir. Oktovian Berty Alexander Sompie, MEng.
3. Keynote Speech (20 minutes):
Prof. Sri Suning Kusumawardhani, S.T., MT
Direktur Pembelajaran dan Kemahasiswaan, Direktorat Jenderal Pendidikan Tinggi, Riset, dan Teknologi.
4. Materi webinar
 - Presentation Session 1: GenAI in Teaching and Learning (40 minutes)
Ascc. Prof. Fariz Darari, S.Kom., M.Sc., Ph.D.

Q&A Session (10-15 minutes)

Moderated by Dr. Puji Mudiana, S.P., M.A.
 - Presentation Session 2: GenAI for medical education and healthcare (40 minutes):
Ascc. Prof. Dr. med. Abraham Simatupang, MD., MKes.

Q&A Session (10-15 minutes)

Moderated by Dr. dr. Nurdjannah Jane Niode, SpKK(K), FINS DV, FAADV
5. Closing Remarks/Wrap up (10 minutes):
Summary of key insights and takeaways from the webinar.

Ir. Lien Herlina, M.Sc.

6. Closing Speech by Dean of FK UNSRAT (5 minutes): Prof. Dr. dr. Nova Hellen Kapantow, DAN, MSc, SpGK

7. Pemberian sertifikat kepada:

- Prof. Sri Suning Kusumawardhani, S.T., MT
- Ascc. Prof. Fariz Darari, S.Kom., M.Sc., Ph.D.
- Ascc. Prof. Dr. med. Abraham Simatupang, MD., MKes.
- Perwakilan Peserta



Universitas Kristen Indonesia

Fakultas Kedokteran

SURAT TUGAS

Nomor: 0289/UKI.F5.D/SDM.01.01/2024

Sehubungan dengan pelaksanaan Webinar dengan tema “ *Harnessing Generative AI (Gen AI) for Fostering Learning Process in Higher Education*” yang diselenggarakan oleh INDOSTAFF, Derap Perempuan Kreatif Indonesia Peduli Bangsa, dan Fakultas Kedokteran Universitas Sam Ratulangi, dengan ini Dekan Fakultas Kedokteran Universitas Kristen Indonesia menugaskan:

Dr. med. dr. Abraham Simatupang, M.Kes

untuk menjadi pembicara/narasumber dalam webinar tersebut diatas yang dilaksanakan pada:

Hari, tanggal : Kamis, 7 Maret 2024
Waktu : Pukul 13:00 WIB - Selesai
Tempat : Daring, pada platform Zoom Meeting

Demikian surat tugas ini diberikan kepada yang bersangkutan agar dilaksanakan dengan sebaik-baiknya.

Jakarta, 6 Maret 2024
Dekan Fakultas Kedokteran,



Dr. dr. Robert Sinurat, Sp.BS(K)

Tembusan :

1. Wakil Dekan II Bidang Administrasi Keuangan, SDM, dan Sarana Prasarana
2. SDM Fakultas Kedokteran



CERTIFICATE

OF APPRECIATION

AWARDED TO

*Assc. Prof. DR. med. Abraham Simatupang,
MD., M.Kes.*

In Sincere Appreciation for Meritorious Presentation as **SPEAKER** in the Webinar on "*Harnessing Generative AI (GenAI) for Fostering Learning Process in Higher Education*", a collaboration of **Fakultas Kedokteran Universitas Sam Ratulangi** with **INDOSTAFF**, **DPKIPB**, and **Fakultas Kedokteran Universitas Kristen Indonesia**, on March 7th, 2024.



Prof. Dr. dr. Nova Hellen Kapantow, DAN, MSc, SpGK
DEAN of FAKULTAS KEDOKTERAN
UNIVERSITAS SAM RATULANGI



Prof. Dr. Illah Sailah, MS
KETUA UMUM DERAP PEREMPUAN KREATIF
INDONESIA PEDULI BANGSA (DPKIPB)



Prof. Dr. Ir. Hj. Nurhayati, M.Sc.Agr
PRESIDIUM OF INDOSTAFF