AMS2024 Workshops (3 workshops)

Symposium on Opportunities and Challenges of Artificial Intelligence in Digital Health
Prof. Rabiee Auditorium, Sharif University of Technology

January 31st – February 1st, 2024

Workshop Location: Kharazmi Hall, CE-Building, 4th Floor, Sharif University of Technology, Tehran, Iran

Workshop Chairs: Alireza Yargholi, Seyed Amir Ahmad Safavi-Naini

Registration is required for participants.

Workshop #1: Wednesday, January 31, 2024 (9:30 – 12:00)
Registration Fee: 300,000 Tomans
(For registration, please go to the **Registration page**)
Maximum Capacity: 70

AI Tools for Digital Health

Target group: Faculty Members of Medical Sciences, Physicians, Medical Students

Lecturers:

Seyed Amir Ahmad Safavi-Naini
Postdoctoral Researcher, AI in Health
Gastroenterology and Liver Diseases Research Institute, SBUMS
& Founder of the PanCanAID Initiative

Zahra Dehghanian
PhD Candidate, Artificial Intelligence
Department of Computer Engineering, Sharif University of Technology

Armin Behnamnia
PhD Candidate, Artificial Intelligence
Department of Computer Engineering, Sharif University of Technology

Workshop length:
Two hours and thirty minutes (150 minutes)

Time & Location:

Wednesday: January 31, 2024 (9:30 – 12:00)
Workshop Location: Kharazmi Hall, CE-Building, 4th Floor

Objectives:

This workshop aims to provide participants with the foundational understanding and development strategies for AI tools in digital health. We start with an introductory overview of the tools and then delve into their specific applications in medical prediction based on data analysis and medical imaging. In the workshop's hands-on part, attendees will design a data structure tailored to medical requirements. The workshop will conclude with participants gaining insights into the interpretability aspects of AI tools. The specific topics include:

Outline:

Foundations of AI in Healthcare (30 mins)

- Overview of AI algorithms
- Utilizing data in AI models for predictions

AI Applications in Medical Imaging (30 mins)

- Fundamentals of AI in imaging
- Machine vision's role in healthcare
- Development and usage challenges in medical imaging tools
- Prospects of augmented intelligence in imaging and the SAM platform
- Exploring the XNAT-AIDs platform

Interactive Session: Conceptualizing Ideas (20 mins)

- Identifying three medical areas that could benefit from AI tools
- Assessing and selecting a viable idea
- Crafting the data pipeline strategy

Understanding AI Tools' Interpretability (30 mins)

- Significance of model interpretability in medical AI
- Reviewing interpretability methodologies and algorithms

Interactive Session:
Integrating Human Judgment with AI (10 mins)

- Addressing a case where clinical judgment disagrees with an AI model's advice
- Suggestions for enhancing the tool's effectiveness

Workshop #2: Wednesday, January 31, 2024 (13:30 – 15:50)
Registration Fee: 300,000 Tomans
(For registration, please go to the **Registration page**)
Maximum Capacity: 70

Basic Skills for Generative AI in Medicine

Target group: Faculty Members of Medical Sciences, Physicians, Medical Students

Lecturer:

Seyed Mahmoud Tara
Associate Professor of Health Informatics
Shahid Rajaie Cardiovascular Institute

Workshop length:

Two hours and twenty minutes (140 minutes)

Time & Location:

Wednesday: January 31, 2024 (13:30 – 15:50)
Workshop Location: Kharazmi Hall, CE-Building, 4th Floor

Outline:

First hour (60 mins)

- The importance of learning generative AI skills
- Artificial intelligence and generative AI
- Various chatbot tools
- General applications of generative AI

Questions & Answers (20 minutes)

Second hour (60 mins)

- Introducing principles of conversation with chatbots
- Applications of generative AI in diagnosis and treatment
- Applications of generative AI in research
- Key points and experiences

- A certificate of participation would be issued upon request.
- It is also possible to participate in the "Fundamentals of Generative AI Skills in Medicine" degree entrance exam.

Workshop #3: Thursday, February 1, 2024 (9:30 – 12)
Registration Fee: 300,000 Tomans
(For registration, please go to the **Registration page**)
Maximum Capacity: 70

Tutorial on LLMs for Digital Health

Target group: Faculty Members of Medical Sciences, Physicians, Medical Students

Lecturers:

S. Muhammed Javad Feyzabadi Sani
Ph.D. Candidate, Artificial Intelligence
Department of Computer Engineering, Sharif University of Technology

Amirhossein Hadian

MSc Student, Artificial Intelligence
Department of Computer Engineering, Sharif University of Technology

Workshop length:

Two hours and thirty minutes (150 minutes)

Time & Location:

Thursday: February 1, 2024 (9:30 – 12)
Workshop Location: Kharazmi Hall, CE-Building, 4th Floor

Objectives:

This workshop focuses on introducing and developing AI-driven large language models (LLM) tools. The session begins with an overview of cutting-edge techniques in crafting LLMs. Subsequently, the discussion will shift to how these models can be applied within healthcare. The hands-on segment of the workshop will provide attendees with practical experience in operating and interacting with a prominent large language model called ChatGPT.

Outline:

Overview of LLM Applications (15 mins)

- A showcase of tools and business applications powered by Large Language Models (LLMs).

Fundamentals of Text Processing and Linguistic Models (40 mins)

- Exploring the basics of Natural Language Processing (NLP) and various language models.
- Delving into text generation with language models, especially InstructLLM.
- An overview of different language models.

LLMs in the Healthcare Sector (40 mins)

- Applying LLMs for enhancing knowledge and providing Retrieval Augmented Generation-based answers.
- Utilizing LLMs for extracting key information.
- Creating text-based reports through LLMs.
- Integrating image-text models for advanced applications.

Hands-On Session: Mastering ChatGPT and Effective Prompting (25 mins)

- Practical experience with the ChatGPT interface.
- Techniques and best practices for effective prompting in ChatGPT.