Workshop Title:
The first International Workshop on Ethics and Bias of Artificial Intelligence in Clinical Applications (EBAIC 2023)

Organizers:

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- Ahmad P. Tafti, PhD, Assistant Professor, Department of Health Information Management, University of Pittsburgh, Pittsburgh, PA, US. Tafti.ahmad@pitt.edu
- Kirk Roberts, PhD, The University of Texas Health Science Center at Houston, US. Kirk.Roberts@uth.tmc.edu

Workshop Topic Description:

Due to the wide adoption of electronic health record (EHR) systems in health care systems in the past decades, the volume of clinical data has grown dramatically. The availability of such large amounts of health data has fostered the application of Artificial Intelligence (AI) in clinical care, for example, clinical decision support, patient management, as well as in clinical and translational research, such as digital phenotyping, cohort discovery, and in-silico trials. Despite the promising potential of AI in clinical applications, its regular use comes with bias and ethical challenges. As highlighted by recent studies, disparities in health care, although may start at the collection of clinical data, could be amplified with the development of AI technologies.

This workshop will provide a unique platform to share the state-of-the-art research, methodologies, and tools to tackle the ethical and bias challenges of AI techniques when applied in clinical applications. The venue will also facilitate interactions among students, researchers, physicians, health IT professionals in health informatics who are interested in AI in clinical applications.

The workshop will invite papers and short abstracts on novel approaches, works in progress, comparative analyses of tools, and original state-of-the-art work in ethics and bias of AI techniques in clinical applications. Selected papers will be presented as podium talks, and other interesting submissions and abstracts will be showcased as poster presentations. In addition, we will organize an educational event, the Ethics and Bias of Clinical AI Applications Hackathon, which uses hands-on algorithm examples and real-world health data to help the researchers and students understand the bias in big data and AI techniques in health care. We will focus on two tasks: clinical natural language processing and medical imaging. The event will be available for all students and researchers and specifically targeted at the students at the intersection of computer science, informatics, and health sciences at the conference.

Audience:
Target audience includes students, researchers, physicians, health IT professionals in health informatics. Anyone interested in the ethics and bias challenges of AI techniques in clinical applications is welcome. Researchers and students working on clinical AI projects and others interested in learning about and sharing experience in addressing ethical challenges when applying AI in real world products are strongly encouraged to

attend. We also welcome students who wish to closely interact with health informatics experts. Potential attendees may come from machine learning, NLP, and medical imaging communities in the medical domain (e.g., AMIA), as well as general health informatics professionals and researchers (e.g., ACL, IEEE). The anticipated number of attendees is around 50.

Publicity:
To attract attendees, we will advertise the workshop widely, including: (1) sending emails using community mailing lists such as AMIA Working Group mailing list; (2) creating a dedicated web site for the workshop, (3) contacting individuals through personal connections of organizers and committee members, (4) leveraging social media such as LinkedIn and Twitter, and (5) contacting training programs in computer science, information science, and biomedical informatics to attract additional students and trainees.

Workshop Structure:
This will be a one-day workshop (6 hours). We will allocate about 1 hour for an invited keynote presentation, 2 hours of podium talks of accepted papers, 1 hour for poster presentations of accepted abstracts, and 2 hours for the Ethics and Bias of Clinical AI Applications Hackathon.

Reviewing:
We will accept both full paper and poster submissions of original research in addressing ethics and bias of AI techniques in clinical applications. All submissions will be submitted and handled through EasyChair. A program committee (PC) will be formed consisting of members from the steering committee and other researchers with experience in health informatics. All submitted papers will undergo a peer review process conducted by at least 2 reviewers from the PC. All accepted submissions will be presented at the workshop and published in the IEEE ICHI 2023 Proceedings (including being archived in IEEE Xplore Digital Library). We also propose to invite selected papers to publish an extended version of their work in a special issue of Journal of American Medical Informatics Association or Journal of Medical Internet Research. (We will start negotiating with the journal after proposal acceptance).

Call for Papers:
See below for tentative Call for Papers with deadlines.

The first international Workshop on Ethics and Bias of Artificial Intelligence in Clinical Applications (EBAIC 2023) at ICHI

June 10th, 2023, Huston, Texas

Call for Participation

Due to the wide adoption of electronic health record (EHR) systems in health care systems in the past decades, the volume of clinical data has grown dramatically. The availability of such large amounts of health data has fostered the application of Artificial Intelligence (AI) in clinical care, for example, clinical decision support, patient management, as well as in clinical and translational research, such as digital phenotyping, cohort discovery, and in-silico trials. Despite the promising potential of AI in clinical applications, its regular use comes with bias and ethical challenges. As highlighted by recent studies, disparities in health care, although may start at the collection of clinical data, could be amplified with the development of AI technologies.

Topics of interest

Any original methodological research related to ethics and bias of AI in clinical applications. The relevant AI techniques include, but not limited to, natural language processing, medical imaging, deep learning, predictive modeling, Human Computer Interface, Internet of Things, and more. Clinical applications include, but not limited to, clinical decision support, clinical research, translational research, consumer applications, robotics. Other relevant topics include: AI for health equities, health disparities, transparency/interpretability/explainability of AI techniques in clinical applications, data bias, algorithmic bias, human bias of AI techniques, fairness measures, fairness evaluations, fairness tools, reasoning, practical and technical solutions to mitigate the bias, and more.

Schedule-at-a-Glance

- **Keynote,** 1hour
- **Paper presentation**, 2 hours
    - 6 paper presentations
- **Poster presentation**, 1 hour
    - 4 poster presentations
- **Hackathon,** 2 hour
    - Bias in Clinical Natural Language Processing Algorithms. Data: de-identified clinical notes from MIMIC II. Algorithm: Rule-based NLP algorithm and cTAKES (a NLP system for extraction of information from electronic medical record clinical free-text.) Task: Understand how stigmatizing language in clinical notes varies by patients' medical condition and race/ethnicity.
    - Bias in Deep Learning Medical Image Segmentation. Data: Knee X-ray images from NIH OAI publicly available dataset. Algorithm: Convolutional Neural Networks. Task: Understand how knee joint segmentation and measurement varies by different racial or gender groups, and imbalanced training data.

Submission and Review

Anyone who is interested in ethics and bias of AI in clinical applications is invited to submit his or her work to the EBAIC 2023. We accept both full paper submissions (6 pages) and poster submissions (4 pages). All papers will be submitted and handled through EasyChair at xxxx, with peer review by domain experts.

More information

- For more information, please visit xxxxxxx [TBD]

Organizers

Co-Chairs:

- Yanshan Wang, PhD, University of Pittsburgh, US
- Ahmad P. Tafti, PhD, University of Pittsburgh, US
- Kirk Roberts, PhD, The University of Texas Health Science Center at Houston, US

Steering committee:

- Rema Padman, PhD, Carnegie Mellon University, US
- Hongfang Liu, PhD, Mayo Clinic, US
- Fei Wang, PhD, Weill Cornell Medicine, US
- Vikas Singh, PhD, University of Wisconsin-Madison, US
- Hossein Estiri, PhD, Harvard Medical School, US
- Yuan Luo, PhD, Northwestern University, US
- Jeremy Harper, MS, Owl Health Works, US

Important Dates

- Deadline for all submissions: **March 1st, 2023**
- Notification of decisions: **March 21st, 2023**
- Camera-ready due: **March 30th, 2023**
- Workshop date: **June 10th, 2023**