

Machine Intelligence in Healthcare: Perspectives on Trustworthiness, Explainability, Usability and Transparency

July 12, 2019

**Room A1/A2
Neuroscience Center
National Institutes of Health
6001 Executive Blvd
Rockville, Maryland 20852**

Goal:

To invite the community to share their perspectives with us on current issues associated with incorporation of MI tools into healthcare. In the context of this meeting, MI is defined as the ability of a trained computer system to provide rational, unbiased guidance to humans in such a way that achieves optimal outcomes in a range of environments and circumstances. Meeting outputs from this workshop will be used to develop a whitepaper on translating MI for clinical applications and the associated process improvement needed when implementing MI tools in healthcare environments.

Agenda:

8:00 AM: REGISTRATION

8:30 AM: WELCOME AND WORKSHOP OVERVIEW

Joni Rutter, PhD, Deputy Director, National Center for Advancing Translational Sciences, National Institutes of Health

Bruce J. Tromberg, PhD, Director, National Institute of Biomedical Imaging and Bioengineering (NIBIB), National Institutes of Health

8:45 AM: SESSION 1: TRUSTWORTHINESS

8:45 AM: Introduction to Session

8:50 AM: Trustworthiness of Patient Generated Health Data

Session Chair: Luca Foschini, PhD, Co-founder and Chief Data Scientist, Evidation Health

9:00 AM: How Can We Trust Intelligence (Human or Machine) for Guiding Healthcare Decisions?

Brian Alper, MD, MSPH, FAAFP, Founder of DynaMed and Vice President of Innovations and Evidence-Based Medicine Development for EBSCO Health

9:10 AM: An Evaluation of Machine Intelligence Tools to Diagnose Genetic Diseases in Critically Ill Infants

Michelle Clark, PhD, Statistical Scientist, Rady Children's Institute for Genomic Medicine

9:20 AM: How to Trust, but Verify, in Healthcare

Nigam Shah, MBBS, PhD, Associate Professor of Medicine (Biomedical Informatics) and of Biomedical Data Science, Stanford University

9:30 AM: Panel Discussion

10:15 AM: BREAK

10:30 AM: SESSION 2: EXPLAINABILITY

10:30 AM: Introduction to Session

10:35 AM: A Roadmap for AI in Healthcare

Session Chair: Shinjini Kundu, MD, PhD, Medical Researcher and Resident Physician, Department of Radiology at The Johns Hopkins Hospital

10:45 AM: Approaches for Explainability of AI-enabled Systems in Medical Imaging

Berkman Sahiner, PhD, Senior Biomedical Research Scientist at the US Food and Drug Administration (FDA)

10:55 AM: Explainability and Understanding for Deep Learning Models

Sanji Fernando, Senior Vice President of Artificial Intelligence and Analytics Platforms, OptumHealth

11:05 AM: The Importance of Algorithmic Explainability in Behavioral Health

Colin Walsh, MD, MA, Assistant Professor of Biomedical Informatics, Medicine and Psychiatry, Vanderbilt University Medical Center

11:15 AM: Panel Discussion

12:00 PM: LUNCH

1:15 PM: SESSION 3: USABILITY

1:15 PM: Introduction to Session

1:20 PM: Moving AI to the Point of Care

Session Chair: Kenneth Mandl, MD, MPH, Donald A.B. Lindberg Professor of Pediatrics and Biomedical Informatics, Harvard Medical School

1:30 PM: Usability Lessons Applicable to MI

Chris Dymek, EdD, Director, Division of Health Information Technology, Agency for Healthcare Research and Quality

1:40 PM: Deep Care Management at Duke, Lessons in Using MI in a Medicare Population

Erich Senin Huang, MD, PhD, Assistant Professor in Biostatistics and Bioinformatics, Duke University

1:50 PM: Zero-Overhead Contactless Sensors for Health Monitoring

Dina Katabi, PhD, Andrew and Ema Viterbi Professor of Electrical Engineering and Computer Science, Massachusetts Institute of Technology

2:00 PM: Panel Discussion

2:45 PM: BREAK

3:00 PM: SESSION 4: TRANSPARENCY AND FAIRNESS

3:00 PM: Introduction to Session

3:05 PM: Machine Intelligence in Healthcare – Precision Medicine Analytics Platform

Sezin Palmer, Mission Area Executive for National Health, Johns Hopkins University Applied Physics Laboratory

3:15 PM: Learning Healthy Models for Healthcare - What Transparency is Needed to Deploy Models in Healthcare?

Marzyeh Ghassemi, PhD, Assistant Professor of Computer Science and Medicine, University of Toronto

3:25 PM: Vulnerabilities in Machine Learning

S. Matthew Liao, AB, Dphil, Director of the Center for Bioethics, College of Global Public Health, New York University

3:35 PM: Thinking About Transparency and Fairness at Scale: The Workforce, Providers and Suppliers

Session Chair: *Maxine Mackintosh, Researcher, Alan Turing Institute and Co-Founder, One HealthTech*

3:45 PM: Panel Discussion

4:30 PM: WRAP-UP AND CONCLUSIONS

Session 1 – Session Chair *Luca Foschini*

Session 2 – Session Chair *Shinjini Kundu*

Session 3 – Session Chair *Kenneth Mandl*

Session 4 – Session Chair *Maxine Mackintosh*

5:00 PM: ADJOURN