



9th International Workshop on Health Intelligence (W3PHIAI-25)

Tuesday, March 4th, 2025

Location: Room 111A, Pennsylvania Convention Center. All times are in EST.

Workshop Programme:

Tuesday, March 4th, 2025

Time: 8:30am - 5:00 pm EST

8:30 am - 8:45 am

Opening Remarks (Martin Michalowski)

8:45 am - 9:30 am (With Q/A)

(Introduction: Simone Bianco)

Keynote Speaker: **Eric Karl Oermann, MD**, Assistant Professor of Neurosurgery, Radiology, and Data Science; Associate Program Director Neurosurgery Residency Program, NYU Langone Medical Center

Title: *Generative AI in the Clinic: When goes hence?*

Abstract: 21st Century Medicine will be defined by the impact of artificial intelligence (AI) on healthcare. Seemingly every aspect of clinical care, healthcare operations, and biomedical research stands to benefit from emerging AI technologies. Unlike other domains however, Medicine has unique risks, unique regulations, and unique challenges across the AI engineering lifecycle from data to deployment. Even the basic training and benchmarking of medical AI models faces unique challenges in data distribution shift, data provenance, and data security. What do these considerations entail for generative AI in healthcare in terms of how we build it, where we use, and when will we start to see it improving healthcare for our communities?

9:30 am - 10:30 am (20 minutes per full, 15 minutes for short presentation)

Session 1: Deep Learning (3 full presentations)

(Session Chair: Simone Bianco)

1. Uncertainty Aware Deep Learning Models for Audio-driven Disease Diagnosis
Authors: Shubham Kulkarni, Hideaki Watanabe and Fuminori Homma
2. Swin fMRI Transformer Predicts Early Neurodevelopmental Outcomes from Neonatal fMRI
Authors: Patrick Styll, Dowon Kim and Jiook Cha
3. Probabilistic Forecasting of U.S. County-Level Suicide Mortality Rates (2005–2020): Assessing the Impact of Social Determinants of Health
Authors: Seung-Hwan Lim, Jason Wyatt, Anuj Kapadia, Jodie Trafton and Alina Peluso

10:30 am - 11:00 am

Break

11:00 am – 12:10 pm (20 minutes per full, 15 minutes for short presentation)

Session 2: Computer Vision (2 full, 2 short presentations)

(Session Chair: Arash Shaban-Nejad)

1. AI-SAM: Automatic and Interactive Segment Anything Model
Authors: Yimu Pan, Sitao Zhang, Alison D. Gernand, Jeffery A. Goldstein and James Z. Wang
2. Robust Training with Data Augmentation for Medical Computer Vision Classification
Authors: Josué Martínez-Martínez, Olivia Brown, Mostafa Karami and Sheida Nabavi
3. Enhancing Segmentation Fairness Through Curriculum Learning and Progressive Loss: Segmentation of Hip and Knee Radiographs (Short)
Authors: Ehsan Alam, Nickolas Littlefield, John Ryan Martin and Hamidreza Moradi
4. VLCD: Vision-Language Contrastive Distillation for Accurate and Efficient Automatic Placenta Analysis (Short)
Authors: Manas Mehta, Yimu Pan, Kelly Gallagher, Alison Gernand, Jeffery Goldstein, Delia Mwinyelle, Leena Mithal and James Wang

12:10 pm - 1:30 pm

Lunch Break

1:30 pm - 2:30 pm

Poster Session (12 Posters)

1. Long COVID Phenotype Ontology: Introductory Design and Evaluation
Authors: *Tianchu Lyu, Muhammad Amith, Yuan Wang, Jiaying Yi, Rebecca Lin, Myrna Serna and Chen Liang*
2. Cancer-Net PCa-Seg: Benchmarking Deep Learning Models For Prostate Cancer Segmentation Using Synthetic Correlated Diffusion Computer Vision
Authors: *Jarett Dewbury, Chi-En Tai and Alexander Wong*
3. Non-Invasive Sleep Stage Classification with Accelerometer and PPG Data: A Deep Learning Approach for Digital Health
Authors: *Hui Zhang, Guangchen Ruan, Hui Xiao, Guofa Shou, Chen Sun and Yuanfang Guan*
4. Leveraging Geolocation in Clinical Records to Improve Alzheimer's Disease Diagnosis Using DMV Framework
Authors: *Peng Zhang and Divya Chaudhary*
5. Two-phase Framework for Clinical Question-Answering – Auto-correction for Guideline-concordance
Authors: *Amara Tariq, Avish Das, Fatima-Zahrae Nakach, Nathan Yu, Bhavik Patel and Imon Banerjee*
6. Algorithmic Bias in Suicide Risk Prediction Models
Authors: *Sharmin Afrose, Snehalatha Reddy Eggina, Jorge Ramirez. Osorio, Anuj Kapadia, Jodie Trafton and Alina Peluso*
7. Addressing Fairness in AI-Driven Dermatological Diagnosis Using Non-Dermoscopic Images: A Methodology for Bias Detection
Authors: *Chiara Bellatreccia, Andrea Borghesi and Roberta Calegari*
8. Benchmarking the Robustness of Contrastive Learning Models for Medical Image-Report Retrieval under Occlusion Attacks
Authors: *Demetrio Deanda, Yuktha Masupalli, Jeong Yang, Young Lee, Zechun Cao and Gongbo Liang*
9. Contrastive Representation Learning for Pediatric Extubation Readiness Assessment
Authors: *Yuxuan Liu, Aldo Faisal, Jinpei Han and Padmanabhan Ramnarayan*
10. GULP-KG: Graphical Understanding of Lifestyle Patterns with Knowledge Graphs

Authors: Chenghong Lin, Glenn Fernandes, Boyang Wei and Nabil Alshurafa

11. Decoding Pain: Statistical Identification of Biomarkers from Electrophysiological Signals

Authors: Sidharth, Vishwas Sathish, Shweta Bansal, Samantha Sun, Timmy Pham, Kurt Weaver, Rajesh P. N. Rao and Jeffrey Herron

12. RelAI: an automated approach to judge pointwise ML prediction reliability

Authors: Lorenzo Peracchio, Giovanna Nicora, Enea Parimbelli, Tommaso Mario Buonocore, Eleonora Tavazzi, Roberto Bergamaschi, Arianna Dagliati and Riccardo Bellazzi

2:30 pm – 3:20 pm (20 minutes per full, 15 minutes for short presentation)

Session 3: Explainable AI (1 full, 2 short presentations)

(Session Chair: Martin Michalowski)

1. DepressionX: Knowledge Infused Residual Attention for Explainable Depression Severity Assessment

Authors: Yusuf Ibrahimov, Tarique Anwar and Tommy Yuan

2. SpecReX: Explainable AI for Raman Spectroscopy (Short)

Authors: Nathan Blake, David A. Kelly, Akchunya Chanchal, Sarah Kapllani-Mucaj, Geraint Thomas and Hana Chocker

3. Explainable AI for Classifying UTI Risk Groups Using a Real-World Linked EHR and Pathology Lab Dataset (Short)

Authors: Yujie Dai, Brian Sullivan, Axel Montout, Amy Dillon, Chris Waller, Peter Acs, Rachel Denholm, Philip Williams, Alastair D Hay, Raul Santos-Rodriguez and Andrew Dowsey

3:20 pm – 3:40 pm

Break

3:40 pm – 4:55 pm (20 minutes per full, 15 minutes for short presentation)

Session 4: Generative AI + Learning (5 short presentations)

(Session Chair: Simone Bianco)

1. MSM-BD: Multimodal Social Media Bot Detection Using Heterogeneous Information (Short)

Authors: Tingxuan Wu, Zhaorui Ma, Yanjun Cui, Ziyi Zhou and Eric Wang

2. Graph Adapter of EEG Foundation Models for Parameter Efficient Fine Tuning (Short)

Authors: Toyotaro Suzumura, Hiroki Kanezashi and Shotaro Akahori

3. Bringing together invertible UNets with invertible attention modules for memory-efficient diffusion models (Short)

Authors: *Karan Jain and Mohammad Nayeem Teli*

4. Hengqin-RA-v1: Advanced Large Language Model for Diagnosis and Treatment of Rheumatoid Arthritis with Dataset based Traditional Chinese medicine (Short)

Authors: *Yishen Liu, Shengda Luo, Zishao Zhong, Tongtong Wu, Yong Liang, Hudan Pan and Liang Liu*

5. The HPV Cancer Ontology: Foundations To Enhance Patient Knowledge Dissemination (Short)

Authors: *Warren Manuel, Danniell Rhee, Xubing Hao, Lara Savas, Yang Gong, Cui Tao, Lu Tang, Licong Cui and Muhammad Amith*

4:55 pm – 5:00 pm

Closing remarks (Simone Bianco, Arash Shaban-Nejad)