IEEE ICHI 2022

Rochester, MN, USA · June 11-14, 2022

PROGRAM

Website: ichi2022.institute4hi.org

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Welcome

Welcome to ICHI 2022!
We have prepared this program book to give you quick access to the information you need for ICHI 2022.

Enclose you will find

- Logistics information
- Menus for ICHI hosted meals
- Full conference schedule
- Poster titles and authors

Conference materials are also available online at
https://ohnlp.github.io/IEEEICHI2022/conference_materials.html

ICHI 2022 gratefully acknowledges the support from IEEE Computer Society, National Science Foundation (NSF), Institute for Healthcare Informatics (IHI), Mayo Clinic, Franz Inc., IEEE Computer Society Technical Community on Intelligent Informatics (TCII), Health Data Science, and Journal of Healthcare Informatics Research, as well as contributions from the ICHI steering committee, the scientific program committee members, reviewers, and many volunteers.

If you have any questions, the ICHI registration staff is happy to help you.

Hongfang Liu
Ravishankar K Iyer

The ICHI 2022 General Chairs

IEEE ICHI 2022
Rochester, MN, USA · June 11-14, 2022

Program At-a-glance

Saturday, June 11

	Suite 111	Suite 112	Suite 113	Suite 108	Suite 109	Suite 110	Virtual
7:30 AM	Registration @Suite 104 Breakfast @Suite 104						
8:30 AM	Doctoral Consortium	Tutorial 1	Tutorial 2	HI-Edu 2022	HealthNLP 2022	XAI-Healthcare	Machine Learning in Healthcare Data for Precision Medicine
10:00 AM	Coffee Break @Suite 104						
10:30 AM	Doctoral Consortium	Tutorial 1	Tutorial 2	HI-Edu 2022	HealthNLP 2022	XAI-Healthcare	
12:00 PM	Lunch @Suite 104						
1:00 PM	Doctoral Consortium	Tutorial 3	Tutorial 2	HI-Edu 2022		XAI-Healthcare	
2:30 PM	Coffee Break @Suite 104						
3:00 PM	Doctoral Consortium	Tutorial 3	Tutorial 2				
4:30 PM							

Sunday, June 12

7:30 AM	Registration @Ballroom 1 Breakfast @Ballroom 3
8:30 AM	Welcome Session (8:30 - 9:00 AM) Keynote: Towards Impactful Clinical Evidence Powered by Informatics and Data Science (9:00 - 10:00 AM) Dr. Chunhua Weng @Ballroom 2
10:00 AM	Coffee Break @Ballroom 1
10:30 AM	Analytics A1 **ML Methodology** @Suite 109 / Analytics A2 **Imaging** @Suite 110 / Analytics A3 **PGHD and Text Analytics** @Suite 111
12:00 PM	Lunch @Ballroom 3
1:00 PM	Keynote: Leveraging Digital Therapeutics for Health Literacy: A Systems Perspective Dr. Rema Padman @Ballroom 2
2:00 PM	Coffee Break @Ballroom 1
2:30 PM	Analytics A4 **Healthcare Analytics** @Suite 109 / System S1 **Design and Development** @Suite 110 / Human Factors H1 **Human-centered Design** @Suite 111
4:00 PM	Poster & Demo Session @Ballroom 1
5:30 PM	
6:00 PM	Ceremony/Banquet @Ballroom 2/3

Monday, June 13

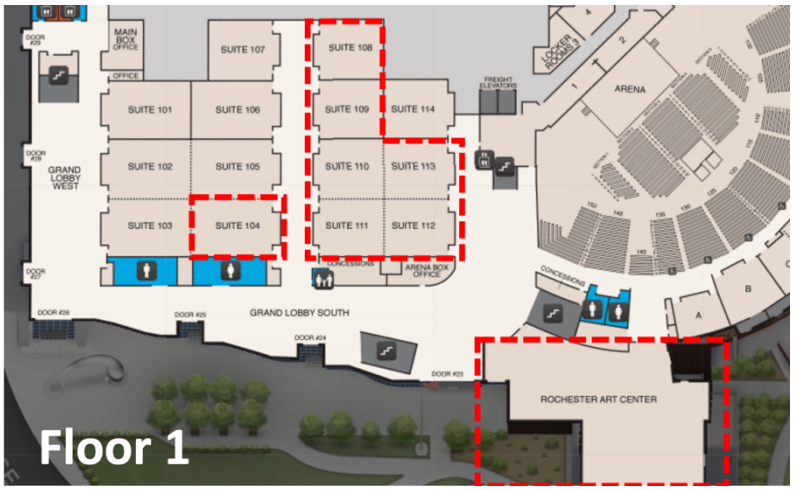
7:30 AM	Registration @Ballroom 1 Breakfast @Ballroom 3	Virtual Special Session @zoom	Women in Healthcare Informatics @Suite 109
8:45 AM			
9:00 AM	Keynote: Designing Health IT to Support Team Cognition and Clinical Work: A Human Factors and Socio-Technical Systems Approach Dr. Ayse P. Gurses @Ballroom 2		
10:00 AM	Coffee Break @Ballroom 1		
10:30 AM	Analytics A5 **Prediction & Classification** @Suite 109	Systems S2 **Wearables & Monitoring** @Suite 110	Human Factors H2 **Self Management** @Suite 111
12:00 PM	Lunch @Ballroom 3		
1:00 PM	Analytics A6 **Event Prediction** @Suite 109	Analytics A7 **Visualization & Explainable AI** @Suite 110	Human Factors H3 **AI-based Applications** @Suite 111
2:30 PM	Coffee Break @Ballroom 1		
3:00 PM	Poster Session @Ballroom 1		
4:00 PM			
6:00 PM	Reception (Sponsored by Mayo Clinic Department of AI&I) @Art Center		

Tuesday, June 14

7:30 AM	Registration @Ballroom 1 Breakfast @Ballroom 3
8:30 AM	Keynote Toward a Learning Health System: Enabling the National Knowledge Ecosystem at Scale Dr. Blackford Middleton Panel: Bridging the gaps between academia and industry for health informatics (9:30 - 10:00) @Ballroom 2
10:00 AM	Coffee Break @Ballroom 1
10:30 AM	Industry Session @Ballroom 2
12:00 PM	Close Session @Ballroom 2
12:30 PM	To-go Lunch @Ballroom 3

Venue Map

All conference events for IEEE ICHI 2022 will be held in the **Mayo Civic Center**. Located in the core of Rochester's downtown, the center is surrounded by a diverse set of restaurants, entertainment, and recreation options. You can find more information about the conference venue at https://www.mayociviccenter.com/ and our website https://ohnlp.github.io/IEEEICHI2022/venue_and_logistics.html.



Hosted Meal Menus

Saturday, June 11

Breakfast (7:30 AM - 8:30 AM) @Suite 104

Gourmet Fiddlehead Coffee
- Regular
- Served with cream, sugar, and sugar substitute

Assorted Fruit Yogurts

Assorted Greek Yogurts

Bakery Assortment
- Danishes
- Scones

Mini Muffins

Coffee Break (10:00 AM - 10:30 AM) @Suite 104

Gourmet Fiddlehead Coffee
- Regular or Decaf
- Served with cream, sugar, and sugar substitute

Energy Bar Assortment

Fresh Whole Fruit

Lunch (12:00 PM - 1:00 PM) @Suite 104

Aquafina Bottled Water

Assorted Canned Pepsi Cola Products

Classic Club Bento Box
- Oven Roasted Turkey
- Ham
- Swiss Cheese
- Butter Lettuce
- Tomato
- Red Onion
- Stone Fruit Aioli
- Dijon Mus tard
- Apple wood Bacon
- Multi Grain Bread

Little Sweetie Bento Box
- Roasted Sweet Potato
- Goat's Milk Cheese
- Sun Dried Tomato
- Arugula
- Sliced Vienna

ALL BENTO BOXES INCLUDE:
- Small Salad;
- Fresh Seasonal Fruit;
- Potato Chips

Coffee Break (2:30 PM - 3:00 PM) @Suite 104

Carroll's Gourmet Popcorn Break
- Assortment of Carroll's Gourmet Popcorn

String Cheese

Sunday, June 12

Breakfast (7:30 AM - 8:30 AM) @Ballroom 3

Good Morning Rochester
- Chilled Fruit Juices
- Fresh Sliced Seasonal Fruit and Berries
- Overnight Oats & Chia
- Yogurt and Granola
- Breakfast Breads
- Muffins
- Whipped Butter
- BEVERAGES:
  - Water; House Blend Coffee; Hot Tea

Coffee Break (10:00 AM - 10:30 AM) @Ballroom 1

Gourmet Fiddlehead Coffee
- Regular or Decaf
- Served with cream, sugar, and sugar substitute

Energy Bites (Gluten Free, Dairy Free, Vegan)
- Assortment:
- Nutella Cranberry & Almonds
- Brownie Coconut
- Pistachio Key Lime

Lunch (12:00 PM - 1:00 PM) @Ballroom 3

Aquafina Bottled Water

Assorted Canned Pepsi Cola Products

Far East Lunch Presentation
- SOBA NOODLE SALAD
  - with Romaine, Napa Cabbage, Snow Peas, Mandarin Oranges, Mixed Peppers & Sesame Soy Vinaigrette
- ORANGE CHICKEN
- BROCCOLI BEEF
- STEAMED JASMINE RICE
- STIR FRY VEGETABLES
- ALMOND COOKIES

Coffee Break (2:30 PM - 3:00 PM) @Ballroom 1

Gourmet Fiddlehead Coffee
- Regular or Decaf
- Served with cream, sugar, and sugar substitute

Carroll's Gourmet Popcorn Break
- Assortment of Carroll's Gourmet Popcorn

Fresh Whole Fruit

Pita Chips

Banquet (6:00 PM) @Ballroom 3

DIETARY REQUESTS:
- Vegetarian Entree

UP NORTH BUFFET
- CREAMY CHICKEN & WILD RICE SOUP
  - with almonds & fresh parsley
- SMOKED TROUT & JERSEY ROYAL SALAD
  - with cress and parsley
- SWEDISH MEATBALLS
  - with Caramelized onion cream sauce, buttered noodles, lingonberry, crema & dill cucumber
- MINNESOTA WILD RICE STUFFED CHICKEN
  - with cream cheese, scallions, mushrooms and cranberries served over arugula
- APPLE POMEGRANATE CRISP
  - with vanilla whipped cream
- SERVED WITH:
  - Dinner Rolls w/Whipped Butter
- BEVERAGES:
  - Coffee (Regular & Decaf); Tea; Water

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Hosted Meal Menus

Monday, June 13

Breakfast (7:30 AM - 8:30 AM) @Ballroom 3

Classic Pre-Fix Breakfast Buffet
- Assorted Mini Danish & Muffins
- Whipped Butter
- Cage-Free Scrambled Eggs
- Crispy Fingerling Potatoes with garlic & fresh herbs
- Applewood Smoked Bacon
- Chicken Apple Sausage
- Cinnamon Roll Bread Pudding
- BEVERAGES:
  - Water; Hot Tea; Coffee

Coffee Break (10:00 AM - 10:30 AM) @Ballroom 1

Gourmet Fiddlehead Coffee
- Regular or Decaf
- Served with cream, sugar, and sugar substitute

Toasts (Gluten Free, Dairy Free, Vegan)
- 2 Pieces Per Person
- White Bean & Cas he w "Ricotta" Strawberry, Mint, Maple
- Edamame & S we e t Pe a, Avocado, Radish, citrus
- Chocolate Hazelnut Chick-Date, Banana, Cacao Nibs

Lunch (12:00 PM - 1:00 PM) @Ballroom 3

Aquafina Bottled Water

Assorted Canned Pepsi Cola Products

Lunch Buffet (Upgraded)
- WALDORF
  - Local Apples, Red Grapes, Candied Walnuts, Baby Butter Leaf, Celery Hearts & Lemon Yogurt Dressing
- BUTTER CHICKEN & NAAN
  - Boneless Chicken Thighs stewed in a creamy Spiced Tomato Sauce. Served with Jasmine Rice and Garlic Naan
- ROASTED PORTOBELLO
  - Walnut Coffee Sauce, Cauliflower Puree, Truffle and Pomegranate
- ASSORTED MINI CHEESECAKES
- INCLUDES:
  - Fresh Dinner Rolls; Whipped Butter
- BEVERAGES:
  - Coffee; Infused Water

Coffee Break (2:30 PM - 3:00 PM) @Ballroom 1

Gourmet Fiddlehead Coffee
- Regular or Decaf
- Served with cream, sugar, and sugar substitute

Carroll's Gourmet Popcorn Break
- Assortment of Carroll's Gourmet Popcorn

Fresh Whole Fruit

Gourmet Kettle Chips

Bar (4:00 PM - 6:00 PM) @Art Center

Hosted Bar 2 DRINK TICKETS PER EACH GUEST BILLED ON CONSUMPTION TICKET IS GOOD FOR:
- Premium Bar Pours
- House Wines by Glass
- Domestic Bottle Beer
- Imported & Local Beer
- Bottled Water
- Bottled Pepsi Products

Cash Bar
- Premium Bar Pours
- House Wines by Glass
- Domestic Bottle Beer
- Imported & Local Beer
- Bottled Water
- Bottled Pepsi Products

Canapes Hors D' Oeuvres
- SMOKED SALMON, RED ONION & CANDIED LEMON BRUSCHETTA
- BRUS CHETTA WITH WHITE BEAN PUREE, OLIVE MELANG E & THYME

Satays, Spindinis & Lollipops
- CARAMEL APPLE & BRIE, MACADAMIA NUT & DRIED CRANBERRIES
- SPICY CHICKEN & WAFFLE SATAY WITH MAPLE BOURBON REDUCTION
- BLACKBERRY CUCUMBER CAPRESE WITH MOZ-ZARELLA PEALRS, MINT & BALS AMIC
- TORNADO POTATO WITH SEA SALT AND SIRACHA KETCHUP

Tuesday, June 14

Breakfast (7:30 AM - 8:30 AM) @Ballroom 3

Gourmet Fiddlehead Coffee
- Regular
- Served with cream, sugar, and sugar substitute

Assorted Fruit Yogurts Assorted Greek Yogurts

Bakery Assortment: Danishes, Scones

Mini Muffins

Coffee Break (10:00 AM - 10:30 AM) @Ballroom 1

Gourmet Fiddlehead Coffee
- Regular or Decaf
- Served with cream, sugar, and sugar substitute

Overnight Oats (Gluten Free)
- Simple - Seasonal Berries, Agave

Fresh Whole Fruit

Grab & Go Lunch (12:00 PM - 1:00 PM) @Ballroom 3

Aquafina Bottled Water

Assorted Canned Pepsi Cola Products

Classic Club Bento Box
- Oven Roasted Turkey
- Ham
- Swiss Cheese
- Butter Lettuce
- Tomato
- Red Onion
- Stone Fruit Aioli
- Dijon Mus tard
- Apple wood Bacon
- Multi Grain Bread

Little Sweetie Bento Box
- Roasted Sweet Potato
- Goat's Milk Cheese
- Sun Dried Tomato
- Arugula
- Sliced Vienna

ALL BENTO BOXES INCLUDE:
- Small Salad;
- Fresh Seasonal Fruit;
- Potato Chips

Saturday, June 11

7:30 - 8:30 AM @Suite 104

Breakfast

Full-day Doctoral Consortium @Suite 111

Doctoral Consortium
Session Chair: Gondy Leroy and Dezhi Wu

- 8:30 - 9:30 AM Elevator speech exercise and presentation.
- 9:30 - 10:00 AM Student presentations.
  Students should prepare a 7minute presentation discussing their research. We will have 3 minutes for questions.

Developing Natural Language Processing to Extract Complementary and Integrative Health Information from Electronic Health Record Data
Huixue Zhou

Improving Prediction and Risk Factor Analysis of Low-Weight-Birth Outcomes in a U.S. Hospital System
Yang Ren

- 10:00 - 10:30 AM Coffee Break
- 10:30 - 12:00 Noon Student presentations.

Health information delivery using audio
Arif Ahmed

Building Physical Activity Ontology from Electronic Health Records
Zhongran Niu

Comprehension of Contextual Semantics Across Clinical Healthcare Domains
Kurt Miller

NLP system for mining social determinant of health from clinical notes and its fairness evaluations
Zhecheng Sheng

AI for Social Good in Healthcare: Moving Towards a Clear Framework and Evaluating Applications
Michal Monselise and Christopher Yang

Linking Predictive and Prescriptive Analytics of Elderly and Frail Patient Hospital Services
Elizabeth Williams, Daniel Gartner and Paul Harper

- 12:00 - 1:00 PM Lunch
- 1:00 - 2:30 PM Student presentations.

Predict Pregnancy Outcomes in the COVID-19 Pandemic Using Electronic Health Records and Machine Learning Approach
Tianchu Lyu

Using a Social, Role-playing, Simulation-Game to Build Resilience in Adolescents
Abhishek Aggarwal

D-Dimer Elevation Matters to Predict COVID-19 Severity: A Machine Learning Approach
Yuqi Wu

- 2:30 - 3:00 PM Coffee break
- 3:00 - 4:30 PM Faculty Panel

Moderator: John Holmes, University of Pennsylvania
Jochen Meyer, OFFIS, Germany
Christopher Yang, Drexel University, USA
Pierangelo Veltri, University Magna Graecia of Catanzaro, Italy
Hongfang Liu, Mayo Clinic, USA
Bill Hersh, Oregon Health & Science University, USA

- 6:00 PM Dinner at a local restaurant: *Victoria*

8:30 AM - 12:00 PM Tutorial @Suite 112

Tutorial 1: Computational Drug Target Prediction: Benchmark and Experiments, by *Dr. Nansu Zong and Dr. Victoria Ngo*

Abstract: In the tutorial, the participants will firstly theoretically review the history of computational drug target prediction. The methods, datasets, and how the experiments are designed will be introduced. Later, the participants will be introduced to a data set, Linked Multipartite Network (LMN), a heterogeneous network that incorporates 12 repositories and includes 7 types of biomedical entities (#20,119 entities, # 194,296 associations). The participants will learn how to use LMN to facilitate drug target prediction, including computational validation, and facilitate scientific discovery. Finally, participants will be introduced to some state-of-the-art computational methods, and practice the adoption of these methods to conduct the experiments by running the tasks with the given training and testing files generated in the LMN.

10:00 - 10:30 AM @Suite 104

Coffee Break

Full-day Tutorial @Suite 113

Tutorial 2: Prescriptive Healthcare Analytics: a Tutorial on Discrete Optimization and Simulation, by *Dr. Elizabeth M. Williams, Dr. Paul R. Harper and Daniel Gartner*

Abstract: There has been recognition of the role that mathematical modelling and Operational Research (OR) have to play in decision making in healthcare. For the last 20 years and even more so than during the recent pandemic, mathematical models have been used for demand and capacity planning across many healthcare services including primary, secondary care and healthcare logistics. In this tutorial, we will provide an overview of different mathematical modeling techniques applied to healthcare but with a particular focus on two paradigms: Discrete Optimization as part of Mathematical Programming and Discrete Event Simulation. Participants will learn how to formulate models mathematically, implement them in Microsoft Excel and use non-commercial solvers to provide solutions of the models. Because in this first part, rather deterministic models are presented, we will introduce the concept of variation in a second part using Discrete Event Simulation.

12:00 - 1:00 PM @Suite 104

Lunch

1:00 - 4:30 PM Tutorial @Suite 112

Tutorial 3: Data Science for Healthcare via an E-Learning Statistics Platform, by *Dr. Philipp Burckhardt, Dr. Saba Al-Sayouri and Dr. Rema Padman*

Abstract: In this tutorial, participants will discover how the ISLE e-learning platform can be used to deliver health informatics and analytics instruction. Tutorial attendees will learn how to build lessons with ISLE through the accompanying authoring tool and how to monitor student progress and performance. In addition, we will discuss how to use clickstream data to improve material on the fly and iteratively improve subsequent lessons. No matter the mode of delivery, attendees will leave with a clear understanding of how to leverage hands-on activities and data analysis exercises to foster understanding of statistical concepts and skills.

8:30 AM - 2:10 PM Workshop **HI-Edu 2022** @Suite 108

The 1st International Workshop on Health Informatics Education

- Keynote Speech (8:30 - 9:30 AM) "Competencies and Curricula Across the Spectrum of Learners for Health Informatics"
  William Hersh, MD, FACMI, FAMIA, FIAHSI, FACP
- Invited Talk (9:30 - 10 AM): "A Data-Driven Assessment of the U.S. Health Informatics Programs and Job Market"
  Huanmei Wu
- Coffee Break (10:00 - 10:30 AM)
- Paper presentations (10:30 AM - 12 PM) (20 minutes each, 15 minutes for presentation, 5 minutes for discussion)

Risks and Benefits of AI-generated Text Summarization for Expert Level Content in Graduate Health Informatics
Regina Merine and Saptarshi Purkayastha

From Undergraduate to Doctoral Health Informatics Training: A Data Focus
Janusz Wojtusiak and Hua Min

Think Outside of Box - Ten Commandments in Providing Optimal Health Informatics Education
Jay Patel, Huanmei Wu and Bari Dzomba

Evaluation of Participants' Reaction and Learning in a Taught Analytics and Modelling Academy Program in U.K.'s National Health Service
Daniel Gartner, Tracey England, Doris Behrens, Izabela Spernaes, Joanne Buchanan and Paul Harper

- Lunch Break (12:00 - 13:30 PM)
- Round table discussion (13:30 - 14:10 PM)
  Andrew Nguyen, Genetech/Roche
  David Marc, College of St. Scholastica
  Huanmei Wu, Temple University
  Dilhari DeAlmeida, University of Pittsburgh
  Cathy Fulton, Indiana University

2:30 - 3:00 PM @Suite 104

Coffee Break

8:30 AM - 1:40 PM Workshop **XAI-Healthcare** @Suite 110

The 2nd International Workshop on eXplainable Artificial Intelligence in Healthcare

- 8:30 - 10:00 AM Keynote Speech
  Lisiane Pruinelli, PhD, MS, RN, FAMIA

Towards trustworthy AI in healthcare
Carson Leung

- 10:00 - 10:30 AM Coffee Break
- 10:30 - 12:00 Noon Paper Presentations

Use of Event-Time Embeddings via RNN to Discern Novel Event Sequences in EHRs
Ozgur Ozmen, Hilda Klasky, Olufemi Omitaomu, Mohammed Olama, Teja Kuruganti, Laura Pullum, Addi Malviya Thakur, Mary Ward, Jeanie M. Scott, Angela Laurio, Brian Sauer, Frank Drews and Jonathan Nebeker

Characteristics of Symptom Tracking App Data and its Potential Use for XAI
Caitlin Duncan and Takayuki Nagai

Efficient Matching of Single Cells and Cell Types
Primož Godec, Blaz Zupan and Martin Stražar

Sanity Check for Shapley values-based explanations of Deep Neural Networks Predictions
Rosalia Tatano, Antonio Mastropietro, Enrico Busto and Francesco Vaccarino

- 12:00 - 13:00 PM Lunch
- 13:00 - 13:40 PM Round Table Discussion: Slow Implementation of AI in Healthcare and the Need for End-user Trust in AI Systems

8:30 AM - 12:10 PM Workshop **HealthNLP 2022** @Suite 109

The 5th International Workshop on Health Natural Language Processing

- 8:30 - 8:40 AM Welcome to HealthNLP
  Yonghui Wu and Hua Xu

8:40 - 9:00 AM Developing Pretrained Language Models for Turkish Biomedical Domain
Hazal Türkmen and Oğuz Dikenelli

9:00 - 9:20 AM Relevance of automated generated short summaries of scientific abstract: use case scenario in healthcare
Gregor Stiglic, Kasandra Musovic, Lucija Gosak, Nino Fijacko, Primoz Kocbek

9:20 - 9:40 AM Improving Sentence Classification in Abstracts of Randomized Controlled Trial using Prompt Learning
Yan Hu, Yong Chen and Hua Xu

9:40 - 10:00 AM Chemical-Protein Relation Extraction with Pretrained Prompt Tuning
Jianping He, Fang Li, Xinyue Hu, Jianfu Li, Yi Nian, Jingqi Wang, Yang Xiang, Qiang Wei, Hua Xu and Cui Tao

- 10:00 - 10:30 AM Coffee Break

10:30 - 10:50 AM Annotating Music Therapy, Chiropractic and Aquatic Exercise Using Electronic Health Record
Huixue Zhou, Greg Silverman, Zhongran Niu, Jenzi Silverman, Roni Evans, Robin Austin and Rui Zhang

10:50 - 11:10 AM A Preliminary Study of Extracting Pulmonary Nodules and Nodule Characteristics from Radiology Reports Using Natural Language Processing
Shuang Yang, Xi Yang, Tianchen Lyu, Xing He, Dejana Braithwaite, Hiren Mehta, Yi Guo, Yonghui Wu and Jiang Bian

11:10 - 11:30 AM Integrating Medical Code Descriptions and Building Text Classification Models for Diagnostic Decision Support
Rui Tang, Zhaowei Zhu, Haishen Yao, Yanxuan Li, Xingzhi Sun, Gang Hu, Yichong Li and Guotong Xie

11:30 - 11:50 AM Canine parvovirus diagnosis classification utilizing veterinary free-text notes
Zhecheng Sheng, Emma Bollig, Jennifer Granick, Rui Zhang, Amanda Beaudoin

11:50- 12:10 PM Terminology Expansion via Co-occurrence Analysis of Large Clinical Real-World Datasets
Markus Kreuzthaler, Bastian Pfeifer and Stefan Schulz

Virtual Workshop @Microsoft Teams

The 2nd Machine Learning in Healthcare Data for Precision Medicine

- 9:00 - 9:35 Welcome
- 9:15 - 9:35 Keynote Speech
  Sultan Turhan
- 9:35 - 9:55 - An xAI Thick Data Assisted Caption Generation for Labeling Severity of Ulcerative Colitis Video Colonoscopy
  Jinan Fiaidhi
- 9:55 - 10:15 - Value-Based Healthcare Translational Data Analytics using the Problem-Oriented Medical Record Graph Representation
  Sabah Mohammed
- 10:15 - 11:45 Coffee Break
- 11:45 - 12:05 - Improving Prediction and Risk Factor Analysis of Low Birthweight Baby Outcomes in a U.S. Hospital System
  Yang Ren
- 12:05 - 12:25 - Using D-dimer as a Biomarker to Predict COVID-19 Disease Severity from Clinical Data of Hospitalized Patients: A Machine Learning Approach
  Yuqi Wu
- 12:25 - 12:45 - Acute Kidney Injury Prediction with Gradient Boosting Decision Trees enriched with Temporal Features
  Stela Golovco
- 12:45 - 13:00 Closing Remarks

Sunday, June 12

7:30 - 8:30 AM @Ballroom 3

Breakfast

8:30 - 9:00 AM @Ballroom 2

Welcome Session

Opening Talk by General Chairs

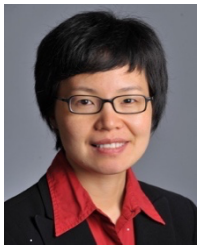
Hongfang Liu and Ravishankar K Iyer

Welcome Talk: Digital Transformation in Medicine: Past, Current and Future of Informatics and Technology at Mayo Clinic, by *James D. Buntrock*

Abstract: In this welcome talk, I will provide a brief history of Mayo Clinic and highlight integrated medicine, informatics, and innovations. I will then describe the critical roles played by IT, engineering, data science, informatics, and AI in the care of the tomorrow envisioned by Mayo Clinic's 2030 Cure Connect Transform strategy. Finally, some opportunities and challenges faced in our mission will be summarized, requiring strong partnership between the healthcare community and the data science, informatics, and engineering communities.

9:00 - 10:00 AM @Ballroom 2

Keynote: Towards Impactful Clinical Evidence Powered by Informatics and Data Science, by *Dr. Chunhua Weng*



Abstract: Robust clinical evidence is the foundation to evidence-based medicine (EBM). However, our clinical research enterprise faces multiple challenges and the PubMed evidence base is fraught with free-text evidence of mixed quality, preventing evidence adoption among clinicians and reducing the trust in science among patients. In this talk I will provide a high-level overview of my lab's research on developing informatics and data science methods to improve the impact of clinical evidence resulting from clinical trial research, spanning the continuum from evidence generation to evidence dissemination. I will cover issues such as informatics-based diversity optimization for clinical research enrollment, data-driven eligibility criteria optimization, scalable clinical evidence extraction and representation, and automated conflicting evidence detection for published clinical trial studies. I will conclude with research opportunities to develop informatics and data science methods to improve the robustness and computability of clinical evidence.

10:00 - 10:30 AM @Ballroom 1

Coffee Break

10:30 AM - 12:00 PM @Suite 109

A1 Analytics Session 1: ML Methodology
Session Chair: Ilan Shomorony

New Variations of Random Survival Forests and Applications to Age-Related Disease Data

Tossapol Pomsuwan

Sharing Time-to-Event Data with Privacy Protection

Luca Bonomi`

S A novel method for handling Missing Not at Random Data in the electronic health records

Xinpeng Shen

S A Transformer-based Model for Older Adult Behavior Change Detection

Fateme Akbari

S Effects of Information Masking in the Task-Specific Finetuning of a Transformers-Based Clinical Question-Answering Framework

Jungwei Fan

10:30 AM - 12:00 PM @Suite 110

A2 Analytics Session 2: Imaging
Session Chair: Minh N. Do

S AGMC-TU Pap-Smear Cytological Image Dataset: Creation, Annotation, and Analysis towards Early Detection of Cervical Cancer

Sourav Dey Roy

S Bayesian optimization-derived batch size and learning rate scheduling in deep neural network training for head and neck tumor segmentation

Haifeng Wang

S Deep Ensemble Network with Meta-Model Architecture to Early Detect the Vascular Damage Caused by Retinopathy

Muhammad Zubair Khan

S Eating detection with a head-mounted video camera

Shengjie Bi

S Visualization and Qualitative Analysis of Rehabilitation Exercises Based on a Mobile App

Oluwadamilola Arinde

10:30 AM - 12:00 PM @Suite 111

A3 Analytics Session 3: PGHD and Text Analytics
Session Chair: Dezhi Wu

Combining Attention-based Models with the MeSH Ontology for Semantic Textual Similarity in Clinical Notes

Noushin Salek Faramarzi

S A comparison of few-shot and traditional named entity recognition models for medical text

Yao Ge

S Aspect-based Sentiment Analysis of Radiology Patient Experience Surveys: A Cohort Study

Kurt Miller

S Graph-Augmented Cyclic Learning Framework for Similarity Estimation of Medical Clinical Notes

Can Zheng

S Mining Social Media Data to Predict COVID-19 Case Counts

Manar Samad

12:00 - 1:00 PM @Ballroom 3

Lunch Break

1:00 - 2:00 PM @Ballroom 2

Keynote: Leveraging Digital Therapeutics for Health Literacy: A Systems Perspective, by *Dr. Rema Padman*

Abstract: Health literacy is a widely recognized challenge for public health, with many adults lacking the requisite skills to engage successfully in the management of their health and healthcare. Affecting both individual and societal health outcomes, it particularly exacerbates the increasing physical and psychological burden for patients with multiple health conditions as well as the elderly and disadvantaged populations. Recent developments in digital therapeutic solutions offer an opportunity to apply systems thinking and perspectives to synthesize the myriad components of a multi-pronged approach to improving societal health literacy at scale. This talk will highlight some of these developments with a focus on digital platforms and algorithmic artifacts in the healthcare delivery setting, recognizing the challenges of misinformation and disinformation in identifying and disseminating authoritative and accurate content for educating and empowering patients and the public.

2:00 - 2:30 PM @Ballroom 1

Coffee Break

2:30 - 4:00 PM @Suite 109

A4 Analytics Session 4: Healthcare Analytics
Session Chair: Jung-wei Fan

A Network-based Modeling Approach to Identify the Common Disease Classes in Patients with Late-stage Prostate Cancer
Michal Monselise

Multi-modal Contrastive Learning for Healthcare Data Analytics
Rui Li

S Dynamic Network Connectivity Analysis for Understanding Attention Deficit Hyperactivity Disorder
Haifeng Wang

S Biventricular involvement in hypertrophic cardiomyopathy: Preliminary analysis of cardiac MRIs with visual Right Ventricular Hypertrophy
Devanshi Damani

S Identify Cancer Patients at Risk for Heart Failure using Electronic Health Record and Genetic Data
Zehao Yu

2:30 - 4:00 PM @Suite 110

S1 System Session 1: Design and Development
Session Chair: Kalyan Pasupathy

Design of a Virtual Cocaine Consumption Scenario for Craving Study
Flavien Lecuyer

tinyCare: A tinyML-based Low-Cost Continuous Blood Pressure Estimation on the Extreme Edge
Mohamed Hassan

S Efficient and Private ECG Classification on the Edge Using a Modified Split Learning Mechanism
Ahmad Ayad

S Quality Control of Whole Slide Images using the YOLO Concept
Kimia Hemmatirad

S Radiology Text Analysis System (RadText): Architecture and Evaluation
Yifan Peng

2:30 - 4:00 PM @Suite 111

H1 Human Factors Session 1: Human-centered Design
Session Chair: Huan He

Modeling the Impact of Social Determinants of Health on COVID Behaviors in Older Adults using the All of Us Dataset
Phillip Ma

S Different Length, Different Needs: Qualitative Analysis of Threads in Online Health Communities
Daniel Diethei

S Electro-Mechanical Data Fusion for Heart Health Monitoring
Kemal Yakut

4:00 - 5:30 PM @Ballroom 1

Poster and Demo Session

See the Poster Section.

6:00 PM @Ballroom 2/3

Ceremony/Banquet

For scientific paper sessions:

- Regular presentations have 25 minutes
  (20 minutes presentation and 5 minutes QA)
- Short presentations S have 15 minutes
  (12 minutes presentation and 3 minutes QA).

Monday, June 13

7:30 - 8:30 AM @Ballroom 3

Breakfast

7:30 - 8:45 AM @zoom

Virtual Session

7:30 - 8:45 AM @Suite 109

Women in Healthcare Informatics

9:00 - 10:00 AM @Ballroom 2

Keynote: Designing Health IT to Support Team Cognition and Clinical Work: A Human Factors and Socio-Technical Systems Approach, by *Dr. Ayse P. Gurses*

Abstract: Health care is increasingly provided in team-based environments, yet little is known about how to design health IT solutions that support care team members' cognition (e.g., information needs, problem detection, communication, coordination, etc.) and clinical work. This is especially true for time-pressured, high-risk, high stakes care situations such as trauma care that involves multiple specialties, and is provided in multiple care locations (e.g., trauma bay, operating room, intensive care unit). In this presentation, I will first discuss how we used a human factors and a socio-technical systems approach to characterize the team work involved in caring for pediatric trauma care patients, including barriers to and enablers for team cognition. I will then describe the human-centered design approach we used to develop a team-centric health IT to support pediatric trauma care. Finally, I will conclude my talk with some health IT design considerations and recommendations for supporting health care team work and 'lessons learned' from our human-centered design process.

10:00 - 10:30 AM @Ballroom 1

Coffee Break

10:30 AM - 12:00 PM @Suite 109

A5 Analytics Session 5: Prediction & Classification
Session Chair: Rui Zhang

Cough Diary based on Sound Classification, Source Validation and Event Detection
Jeffrey Okyere

Reconstructing Missing EHRs Using Time-Aware Within- and Cross-Visit Information for Septic Shock Early Prediction
Ge Gao

S Classifying Drug Ratings Using User Reviews with Transformer-Based Language Models
Akhil Shiju

S Risk-Based Breast Cancer Prognosis Using Minimal Patient Characteristics
Kanika Sood

10:30 AM - 12:00 PM @Suite 110

S2 System Session 2: Wearables & Monitoring
Session Chair: Curtis B. Storlie

PAMS - A Personalized Automatic Messaging System for User Engagement with a Digital Diabetes Prevention Program
Danissa Rodriguez

Predicting A User's Demographic Identity from Leaked Samples of Health-Tracking Wearables and Understanding Associated Risks
Sudip Vhaduri

The Visual Accelerometer: A High-fidelity Optic-to-Inertial Transformation Framework for Wearable Health Computing
Chenhan Xu

S Practicality of Automatic Monitoring Sufficient Fluid Intake for Older People
Rainer Lutze

10:30 AM - 12:00 PM @Suite 111

H2 Human Factors Session 2: Self Management
Session Chair: Huanmei Wu

A Qualitative Study of Family Caregivers' Technology Use in Alzheimer's Disease Care
Yun Qu

A Tale of Two Perspectives: Harvesting System Views and User Views to Understand Patient Portal Engagement
Jiawei Zhou

S Patient Portal Adoption, Use, and Satisfaction among U.S. Adults in Late-stage COVID-19 Pandemic
Tera L. Reynolds

S A Systematic Review of Healthcare Information Technology Anomaly Classification
Laura Pullum

S Human-centered Design for a Chronic Disease Management System: An explorative case for Cystic Fibrosis
Maximilian Kurscheidt

12:00 - 1:00 PM @Ballroom 3

Lunch Break

1:00 - 2:30 PM @Suite 109

A6 Analytics Session 6: Event Prediction
Session Chair: Sunghwan Sohn

Audio-Based Cough Detection in Clinic Waiting Rooms
Yumna Anwar

EventScore: An Automated Real-time Early Warning Score for Clinical Events
Ibrahim Hammoud

Reduce the Cold Start of COVID-19 In-hospital Mortality Prediction Models via Transfer Learning
Jiacheng Liu

S Detection of Dementia Signals from Longitudinal Clinical Visits Using One-Class Classification
Sunghwan Sohn

1:00 - 2:30 PM @Suite 110

A7 Analytics Session 7: Visualization & Explainable AI
Session Chair: Yanshan Wang

Core-set Selection Using Metrics-based Explantations (CSUME) for multiclass ECG

Sagnik Dakshit

S A Collaborative Platform Supporting Distributed Teams in Visualization and Analysis of Infectious Disease Data

Florian Vögtle

S Alcohol Status Standardization from Clinical Real World Data with Transformer Architectures

Amila Kugic

S An Interactive Visualization Tool for Medication (Re)fill Adherence: A Case Study of Pharmacy Claims-derived Adherence Measures in Asthmatics

Kevin Gorman

S LIVE: A Local Interpretable model-agnostic Visualizations and Explanations

Peichang Shi

1:00 - 2:30 PM @Suite 111

H3 Human Factors Session 3: AI-based Applications
Session Chair: Nansu Zong

A Novel IoT-based Framework for Non-Invasive Human Hygiene Monitoring using Machine Learning Techniques

Md Jobair Hossain Faruk

Oculo-Cognitive Addition Test: Quantifying Cognitive Performance During Variable Cognitive Workload Through Eye Movement Features

Kate Hagen

S Designing AINA - Intercultural Human-Centered Design of an AI-based application for supporting the diagnosis of Female Genital Schistosomiasis

Muhammed-Ugur Karagülle

S Factors Facilitating the Acceptance of Diagnostic Robots in Healthcare: A Survey

Jannik S. Pedersen

S The Impact of 3D Stereopsis and Hand-Tool Alignment on Effectiveness of a VR-based Simulator for Dental Training

Peter Haddawy

2:30 - 3:00 PM @Ballroom 1

Coffee Break

3:00 - 4:00 PM @Ballroom 1

Poster Session

See the Poster Section.

4:00 - 6:00 PM @Art Center

Reception

Sponsored by Mayo Clinic Department of AI&I.

For scientific paper sessions:

- Regular presentations have 25 minutes (20 minutes presentation and 5 minutes QA)
- Short presentations S have 15 minutes (12 minutes presentation and 3 minutes QA).

Tuesday, June 14

7:30 - 8:30 AM @Ballroom 3

Breakfast

8:30 - 9:30 AM @Ballroom 2

Keynote: Toward a Learning Health System: Enabling the National Knowledge Ecosystem at Scale,
by *Dr. Blackford Middleton*

Abstract: In this talk, Dr. Middleton will highlight the essential informatics building blocks of an enabled Learning Health System, and key AI-driven components. He will talk first about modern clinical information needs, his early experiences building CDS tools in EHR, the central problem of knowledge exchange between EHRs, and the concerns regarding evaluation of a man-machine (AI)-patient triad in decision making going forward. If a shared vision is adopted across industry and academe, and enabled, he will describe one possible result: a National Knowledge Ecosystem to support a LHS.

9:30 - 10:00 AM @Ballroom 2

Panel: Bridging the gaps between academia and industry for health informatics

Dr. Blackford Middleton
Dr. Andrew Nguyen
Dr. Prasanna Desikan
Dr. Xia Hu

10:00 - 10:30 AM @Ballroom 1

Coffee Break

10:30 AM - 12:00 PM @Ballroom 2

Industry Session
Session Chair: Alexander J. Ryu

IMI-CDE: an interactive interface for collaborative mapping of study variables to common data elements
Hua Xu

Entity Event Knowledge Graph for Powerful Health Informatics
Ravi Bajracharya

RWD Analytics Engineering, Bridging the Gap between IT and Data Science
Andrew Nguyen

LANN: an integrated online annotation tool for information extraction
Jingqi Wang

Improving healthcare workforce efficiency using machine learning and predictive analytics
Daniel Quest

RecordTime – An Internally-Developed Web Application to Ease the Pain of Reviewing PDF Medical Records
Kevin Peterson

12:00 - 12:30 PM @Ballroom 2

Close Session

12:00 - 1:00 PM @Ballroom 3

Grab & Go Lunch

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Posters

Sunday, June 12, 2022, 4:00 - 5:30 PM @Ballroom 1
Monday, June 13, 2022, 3:00 - 4:00 PM @Ballroom 1

Poster and Demo Session

1 A Mobile Application for Alzheimer's Caregivers
Nafees Qamar

2 A Novel Joint Longitudinal Model for Predicting Post-ICU Anemia
Gabriel Demuth and Curtis Storlie

3 Annotations of Virus Data for Knowledge Enrichment
Patrizia Vizza, Giuseppe Tradigo, Pietro Hiram Guzzi, Barbara Puccio, Mattia Prosperi, Carlo Torti and Pierangelo Veltri

4 Automated Cobb Angle Measurement in Adolescent Idiopathic Scoliosis: Validation of a Previously-Published Deep Learning Method
Shi Yan, Caroline Constant, Taghi Ramazanian, Hilal Maradit Kremers and A. Noellel Larson

5 Automated Detection of Type of Scoliosis Surgery from Operative Notes Using Natural Language Processing
Elham Sagheb, Hilal Maradit Kremers, Sunghwan Sohn, Taghi Ramazanian and Noelle Larson

6 Bayesian Change Point Detection for Mixed Data with Missing Values
Alexander Murph and Curtis Storlie

7 Decompensation Prediction for Hospitalized COVID-19 Patients
Meghna Singh, Jiacheng Liu, Lisa Kirkland and Jaideep Srivastava

8 DeLaBE: A Deep Learning architecture for Bio-images enhancing
Patrizia Vizza, Mattia Cannistra, Giuseppe Tradigo, Giuseppe Lucio Cascini, Pietro Hiram Guzzi and Pierangelo Veltri

9 Does comorbidity matrix provide similar amount of predictive information: Comparisons from Charlson and Elixhauser using Deep Learning
Prajwal Pradhan, Yue Liang, Pui Ying Yew, Matt Loth, Terrence Adam, Jennifer Robinson, Peter Tonellato and Chin-Lin Chi

10 Usability of Electronic Health Records from Nurses' Perspectives: A Systematic Review
Suhyun Park, Jenna Marquard, Robin Austin, David Pieczkiewicz, Connie Delaney

11 Enabling Biomedical Semantic Knowledge Resource's Paths with the K-Ware Platform
Bruno Thiao-Layel, Vianney Jouhet, Guillaume Blin and Gayo Diallo

12 Evaluation of Document-Level Identification of Pulmonary Nodules in Radiology Reports Using FLAIR Natural Language Processing Framework
Ray Qian, Sunyang Fu and Hongfang Liu

13 Evaluation of mCODE Coverage in EHR: a Scoping Review of Cancer Natural Language Processing
Liwei Wang, Sunyang Fu, Andrew Wen, Xiaoyang Ruan, Huan He, Sijia Liu, Sungrim Moon, Michelle Mai, Irbaz Riaz, Nan Wang, Ping Yang, Hua Xu, Jeremy L. Warner and Hongfang Liu

14 HaLowNet - A WiFi HaLow network-based information system for the provision of multi-sided applications for medical emergency scenarios
Justus Purat, Nicolas J. Lehmann, Muhammed-Ugur Karagülle and Agnès Voisard

15 Improving Covid-19 vaccine literacy among undergraduate students in Burkina Faso
Michel J Some, Roland Benedikter, Rasmané Yameogo, Ibrahim Traoré, Gayo Diallo, Ismaïla Ouedraogo and Ghislain Atemezing

16 Internet of Healthcare Things (IoHT): Towards a Digital Chain of Custody
Lalitha Donga, Rajendra K. Raj and Sumita Mishra

17 Machine Learning for Predicting Cancer Severity
Alex Qin, Md Rakibul Hasan, Khandaker Asif Ahmed and Md Zakir Hossain

18 MedTator: A Serverless Web-based Tool for Corpus Annotation
Huan He, Sunyang Fu, Liwei Wang, Andrew Wen, Sijia Liu and Hongfang Liu

19 Mining Transportation Issues from Patient Portal Messages
Nan Wang, Ming Huang and Jungwei Fan

20 Mitigating Membership Inference in Deep Learning Applications with High Dimensional Genomic Data
Chonghao Zhang and Luca Bonomi

21 MTAP - A Distributed Framework for NLP Pipelines
Benjamin Knoll, Reed McEwan, Raymond Finzel, Greg Silverman, Rui Zhang, Serguei Pakhomov and Genevieve Melton

22 Multi-perspective Characterization of Anaphylactic Risk for COVID-19 Vaccination - A Visual Analytic Approach
Yue Hao and Guoray Cai

23 On the identification of PoIs in glucosimeter data
Patrizia Vizza, Giuseppe Tradigo, Francesco Scala, Raffaele Giancotti, Pietro Hiram Guzzi, Concetta Irace, Sergio Flesca and Pierangelo Veltri

24 Machine Learning Models To Predict Length Of Stay In Hospitals
Raunak Jain, Mrityunjai Singh, A. Ravishankar Rao and Rahul Garg

25 A Deep Learning Based Predictive Model for Healthcare Analytics
Nguyen Duy Thong Tran, Carson Leung, Evan W.R. Madil and Phan Thai Bin

26 Racial Disparities in Alzheimer's Disease and Alzheimer's Disease-Related Dementias from the Disease Progression Perspective
Haozuo Zhao, Haitao Chu, Sicheng Zhou, Fang Yu, Xianghua Luo and Rui Zhang

27 SurgeRate - An approach to the evaluation of the performance of veterinary surgeons
Nicolas J. Lehmann, Muhammed-Ugur Karagülle, Lea R. Muth, Stefan Schmid, Agnès Voisard, Laura Rohwedder and Peter Böttcher

28 Visualizing the Interpretation of a Criterion-Driven System that Automatically Evaluates the Quality of Health News: An Exploratory Study of Two Approaches
Xiaoyu Liu and Susan McRoy