Tom Hartvigsen

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RESEARCH INTERESTS: Sequence Modeling, Recurrent Neural Networks, Reinforcement Learning, NLP.

EDUCATION

Worcester Polytechnic Institute, *Worcester, MA*
> Ph.D., Data Science 2021
> Advisors: Elke Rundensteiner, Xiangnan Kong
> Earned MS in 2018

SUNY Geneseo, *Geneseo, NY*
> B.A., Applied Mathematics 2016
> BioMathematics minor
> Advisors: Chris Leary, Kirk Anne

PUBLICATIONS

PEER-REVIEWED PUBLICATIONS

1. *Adaptive-Halting Policy Network for Early Classification.*
   Thomas Hartvigsen, Cansu Sen, Xiangnan Kong, Elke Rundensteiner.
   ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD), 2019.

2. *Comparing General and Locally-Learned Word Embeddings for Clinical Text Mining.*
   Jidapa Thadajarassiri, Cansu Sen, **Thomas Hartvigsen**, Xiangnan Kong, Elke Rundensteiner.
   IEEE International Conference on Biomedical and Health Informatics (BHI), 2019.

3. *Early Diagnosis Prediction with Recurrent Neural Networks.*
   Daniel Johnston, Liubou Klindziuk, Lolita Nazarov, Elke Rundensteiner, **Thomas Hartvigsen**.
   MIT Undergraduate Research Technology Conference (IEEE MIT URTC), 2019.

4. *Detecting MRSA Infections by Fusing Structured and Unstructured Electronic Health Record Data.*
   Thomas Hartvigsen, Cansu Sen, Elke Rundensteiner.
   Communications in Computer and Information Science, 2018.

5. *Early Prediction of MRSA Infections using Electronic Health Records.*
   Thomas Hartvigsen, Cansu Sen, Sarah Brownell, Erin Teeple, Xiangnan Kong, Elke Rundensteiner.
   International Conference on Health Informatics (HEALTHINF), 2018. Short-listed for Best Student Paper.

6. *Handling Missing Values in Multivariate Time Series Classification.*
   Julia Friend, Alec Hauck, Sruthi Kurada, Cansu Sen, Elke Rundensteiner, **Thomas Hartvigsen**.
   MIT Undergraduate Research Technology Conference (IEEE MIT URTC), 2018.

7. *CREST - Risk Prediction for Clostridium Difficile Infection Using Multimodal Data Mining.*
   Cansu Sen, **Thomas Hartvigsen**, Kajal Claypool, Elke Rundensteiner.
   European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML/PKDD), 2017.

MANUSCRIPTS

1. *Reducing Computation in Recurrent Networks by Selectively Updating State Neurons.*
   Thomas Hartvigsen, Cansu Sen, Xiangnan Kong, Elke Rundensteiner. (Forthcoming)

2. *Predicting Hospital-Acquired Clostridium Difficile Infection Using Electronic Health Record Information.*
   Erin Teeple, **Thomas Hartvigsen**, Cansu Sen, Elke Rundensteiner. (Forthcoming)

3. *Patient-Level Classification of Clinical Note Sequences Guided by Hierarchical Attention.*
   Cansu Sen, **Thomas Hartvigsen**, Xiangnan Kong, Elke Rundensteiner. (Forthcoming)

4. *Learning Temporal Relevance in Longitudinal Medical Notes.*
   Cansu Sen, **Thomas Hartvigsen**, Xiangnan Kong, Elke Rundensteiner. (Forthcoming)

5. *Human Attention Maps for Text Classification: Do Humans and Neural Networks Focus on the Same Words?*
   Cansu Sen, **Thomas Hartvigsen**, Biao Yin, Xiangnan Kong, Elke Rundensteiner. (Forthcoming)

6. *Similarity-Preserving Meta-Embedding.*
   Jidapa Thadajarassiri, Cansu Sen, **Thomas Hartvigsen**, Xiangnan Kong, Elke Rundensteiner. (Forthcoming)

Experience

Research Fellow, WPI, advised by Prof. Elke Rundensteiner	2016 - 2021
Machine Learning Research Intern, UMass Med. School, with Dr. Jomol Matthew	2018 - 2019
NSF REU Intern, University of Arizona, advised by Prof. Shirley Papuga	Summer of 2015
Research Assistant, SUNY Geneseo, with Prof. Chris Leary	2014 - 2016

Selected Awards

IMA Travel Grant, Institute for Mathematics and its Applications, U. of Minn.	2019
KDD 2019 Student Travel Grant, NSF and ACM	2019
Graduate Student Travel Grant, WPI	2019
Best Poster, Graduate Research Innovation and Exchange, WPI	2019
People's Choice Poster Award, Graduate Research Innovation and Exchange, WPI	2018
Graduate Student Travel Grant, WPI	2018
People's Choice Poster Award, Graduate Research Innovation and Exchange, WPI	2017
Graduate Student Travel Grant, WPI	2017
GAANN Ph.D. Fellowship, U.S. Deptartment of Education	2016-2021

Teaching

NSF REU primary mentor, WPI.	Summers of 2017-19

    Students: Y. Klindziuk, D. Johnston, L. Nazarov, J. Friend, A. Hauck, S. Kurada, S. Brownell, S. Tocci.

    Outcomes: One paper per summer.

Teaching Assistant, SUNY Geneseo, Modeling Bio. Systems (2x) and BioStats (1x).	2015-2016
Modeling Biological Systems, SUNY Geneseo	2016

    Guest lecturer: taught Percolation Models, created and led in-class exercise in R.

Technical Skills

Programming: Python, R, LaTeX, SQL.
Frameworks: PyTorch, TensorFlow, Scikit-learn, NumPy.