Sagi **Shaier**

🔷 Google Scholar ✉ Sagi.Shaier@colorado.edu ⭘ GitHub 🌐 Personal Website 🔗 LinkedIn ✏ Towards Data Science Blog

Research Interests_____

Dialogue/QA systems, information retrieval, knowledge graphs, continual learning, biomedicine, factuality

Education_____

University of Colorado Boulder   *Boulder, Colorado*

PH.D. IN COMPUTER SCIENCE   *Aug. 2020 - Aug. 2025 (estimate)*
Co-advised by Katharina Kann and Lawrence Hunter. 3.83 GPA

Kennesaw State University   *Kennesaw, Georgia*

BACHELOR'S OF SCIENCE   *Aug. 2014 - Dec. 2018*
Major in Computational and Applied Mathematics, Statistics minor, Pre-Med track. 3.96 GPA

Publications (Accepted)_____

2022   **Shaier**, S., Raissi, M. and Seshaiyer, P., "Data-Driven Approaches for Predicting Spread of Infectious Diseases
            Through DINNs: Disease Informed Neural Networks", Letters in Biomathematics., Vol. 8, Iss. 1, pp. 71-105.
            Impact factor: 2.78.

2019   **Shaier**, S, Burke, M. "A Mathematical Model for the Effect of Domestic Animals on Human African
            Trypanosomiasis (Sleeping Sickness)," The Kennesaw Journal of Undergraduate Research: Vol. 6 : Iss. 1,
            Article 1.

Publications (Under Review/In Preparation)_____

2022   **Shaier**, Bennett, Hunter, Kann, **"Transformer-Based Biomedical Question Answering Systems Exhibit Social
            Biases"** (under review).

2022   **Shaier**, Hunter, Kann, **"On Language Models, Medicine, and Factuality"** (under review).

2022   **Shaier**, Hunter, Kann, "Mind the Knowledge Gap: A Survey of Knowledge-enhanced Dialogue Systems" (In
            preparation)

Mentoring Master Students

Spring 2023	Using language models to generate text with citations to evaluate its factuality	Chiranthan Sridhar
Spring 2023	Evaluating evaluation methods that measure the factuality of text	Arvind Sreenivas
Spring 2023	Developing approaches that use existing medical textbooks to improve the performance on the United States Medical License Exams dataset (MedQA-USMLE)	George Baker
Fall 2022	Developing a method to automatically evaluate dialogue systems	Satviki Sanjay Pathak

Professional Experience_____

University of Colorado Boulder

AI Researcher   *Sep. 2022 - Present*
• Developing a pipeline for Alzheimer's detection

Graduate Research Assistant   *Jan. 2022 - Present*
• Validating and improving our internal biomedical knowledge graph and knowledge graph creation methods

Graduate Teaching Assistant   *Aug. 2020 - Jan. 2022*
• Algorithms: graded proof-based assignments and taught weekly hour-long recitations on the fundamentals of algorithms and various algorithmic strategies
• Human Computer Interaction: directed weekly hour-long recitations on techniques for user-centered design and the development of interactive technologies

Pacific Northwest National Laboratory
National Security PhD Intern   *May. 2021 - Oct. 2021*
- Applied topological structures to high dimensional word embeddings
- Used topological data analysis methods to identify logic in NLP
- Experimented with novel word representation approaches

Quantum Metric
Data Scientist - Research Team   *Dec. 2019 - May. 2020*
- Spearheaded strategic projects such as predictive behavioral analytics, predictive churn risk score, loyalty score, & more
- Researched, constructed, and implemented various algorithms to predict customers' psychological nature across diverse industries such as airlines, retail, & banking
- Integrated Google's BigQuery, AutoML, & servers to optimize queries and analyses on big data while utilizing numerous supervised & unsupervised algorithms such as XGBoost, K-Means, Regressions, DBSCAN, PCA, Random Forest, & Neural Networks

Kepler Computing
Machine Learning Research Engineer (Contract)   *July. 2019 - Oct. 2019*
- Identified key computation characteristics of AI workloads in areas such as self-driving, vision, speech, and AR/VR
- Worked with the chief computer architect and HPC engineers to co-design groundbreaking AI ASIC
- Studied cutting edge AI workloads and tracked innovations happening in AI

Welocalize
Machine Learning Intern   *May. 2019 - Aug. 2019*
- Built regression models to predict project duration times and to detect outliers
- Gathered, engineered, and visualized various data types
- Identified bottlenecks within the organization using clustering analysis, Seaborn correlations, dimensionality reduction, and H2O.AI RF

Hack Oregon
Data Scientist on the Disaster team (Volunteer)   *Feb. 2019 - Oct. 2019*
- Mapped the distribution of likely casualties in the 9.0 Cascadia Earthquake in order to better understand medical response needs

Awards_____

Summer 2021 **Dean's Summer Research Fellowship** University of Colorado Boulder

Fall 2020 **Early Career Professional Development Fellowships** University of Colorado Boulder

Fall 2020 **Departmental Fellowship** University of Colorado Boulder

Fall 2017, Spring 2018, Fall 2018 **National Science Foundation Scholarship** Kennesaw State University

Summer 2018 **Society for Mathematical Biology Award** Kennesaw State University

Summer 2018 **Birla Carbon Scholarship** Kennesaw State University

Spring 2018 **Undergraduate Research Award** Kennesaw State University

Talks_____

Dec. 2022	On Language Models, Medicine, and Factuality	International Society for Computational Biology in Aspen, Colorado

Posters_____

Jan. 2023	Extreme Multi-hop Question Answering on a Massive Biomedical Knowledge Graph	Pacific Symposium on Biocomputing in The island of Hawaii, Hawaii
Dec. 2022	On Language Models, Medicine, and Factuality	International Society for Computational Biology in Aspen, Colorado
Jul. 2018	A Mathematical Model for the Effect of Domestic Animals on the Basic Reproduction Number of Human African Trypanosomiasis (Sleeping Sickness)	Annual Meeting of the Society for Mathematical Biology in Sydney, Australia
Apr. 2018	A Mathematical Model for the Effect of Domestic Animals on the Basic Reproduction Number of Human African Trypanosomiasis (Sleeping Sickness)	KSU Symposium of Student Scholars in Kennesaw, Georgia

Jul. 2017	A Mathematical Model for the Effect of Domestic Animals on Human African Trypanosomiasis (Sleeping Sickness)	Annual Meeting of the Society for Mathematical Biology in Utah
Apr. 2017	A Mathematical Model for the Effect of Domestic Animals on Human African Trypanosomiasis (Sleeping Sickness)	KSU Symposium of Student Scholars in Kennesaw, Georgia
Mar. 2017	A Mathematical Model for the Effect of Domestic Animals on Human African Trypanosomiasis (Sleeping Sickness)	Southern Regional Honors Conference in Asheville, North Carolina
Apr. 2016	A Mathematical Model of African Sleeping Sickness	KSU Symposium of Student Scholars in Kennesaw, Georgia

Military

Israel Defense Forces   *Israel*

Aug 2010 - Aug. 2013

• Prevented further escalations in terrorism throughout the Middle East