Shruthi Chari

518 · 961 · 8820 • charis@rpi.edu • charishruthi.github.io • Troy, NY (EB2-NIW obtained)

EDUCATION

Rensselaer Polytechnic Institute   Troy, NY
Doctor of Philosophy in Computer Science, GPA: 3.78/4.00   August 2024 (*Expected*)
Master of Science in Computer Science , GPA: 3.84/4.00   May 2019

PES Institute of Technology   Bangalore, India
Bachelor of Engineering in Computer Science, GPA: 9.18/10.00   May 2015

RELEVANT EXPERIENCE

Rensselaer Polytechnic Institute, Research Assistant   Aug. 2019 - Present; Troy, NY
Advised by Prof. DL. McGuinness, Prof. O. Seneviratne, Dr. HO. Santos and Dr. J. McCusker

· As a part of the IARPA HIATUS project and my PhD thesis:
  – Investigating representation of text explanations of ML outputs in authorship attribution setting using EO.
  – Extracting explanations from KGs using RAG techniques on foundation models (LLMs) (e.g., LLama2, Mistral)
  – Developing a multi-step framework to go from user question (e.g., fine-tuning and generation from LLMs) to natural language explanation along EO supported explanation types.
· As a part of the IBM-RPI HEALS initiative and my PhD thesis:
  – Designed Explanation Ontology (EO) to structure and support the creation of different explanation types from the dependencies in the system, user, and interface spaces.
  – Supported explainer methods from IBM's AIX-360 toolkit (e.g., SHAP, Rule-based explainers) within the EO.
  – Represented explanations in knowledge graphs (KGs) using the EO vocabulary, across seven different exemplar use cases spanning food, healthcare and finance domains.

Center for Computational Health, IBM Research, Research Extern   Troy, NY
Hosted by Dr. P. Chakraborty   May 2021 – Sept. 2021

· As a part of the clinical explainability thrust of the HEALS project and my PhD thesis:
  – Lead an effort to generate contextual explanations from medical guidelines, with a focus on type-2 diabetes guidelines, to explain ML risk predictions on patients' claims data.
  – Benchmarked and set up experiments to use LLMs for clinical QA setup (i.e., BERT, BioBERT-BioASQ, SciBERT, BioBERT-ClinicalADR).
  – Augmented LLMs with domain ontologies to improve semantic coherence of answers with the questions.
  – Mentored students to build a user-friendly dashboard integrating QA insights alongside predicted results of patients and helped in conducting clinician interviews using the dashboard.

IBM Research, Intern   May 2019 - Aug 2019; Yorktown Heights, NY
Hosted by Dr. Ching-Hua Chen

· Implemented semantic methods to align patient's temporal physical activity data to population descriptions in behavior change literature, with the goal of suggesting relevant studies.
  – Built a HealthKit ontology to model physical activity data in a personal knowledge graph (KG).
  – Reused the Study Cohort Ontology (SCO) to model population descriptions in a literature KG.
  – Developed a prototype explainable natural language explanation for the match between patients and populations from the KGs.

Rensselaer Polytechnic Institute, Research Assistant   May 2018 - May 2019; Troy, NY
Advised by Prof. Deborah L. McGuinness, Prof. O. Seneviratne and Dr. AK Das

· As a part of the IBM-RPI HEALS initiative and my Masters thesis:
  – Designed the SCO to represent descriptions of study populations found in research studies especially those cited in the ADA 2018 guidelines.
  – Enabled study applicability analyses supported via SPARQL queries on the SCO KGs to support cohort similarity visualizations and analyze study quality and limitations.

TECHNICAL SKILLS

Languages	Python, Java, Javascript, LaTeX, Shell, JQuery, HTML/CSS
Frameworks	Pytorch, Tensorflow, CUDA
Developer Tools	Git, Docker, Conda, Google Cloud Platform, AWS
Libraries	Pandas, Numpy, Seaborn, Matplotlib

FELLOWSHIPS AND AWARDS

· Nominated from RPI as one of the two candidates for the Schmidt Science fellowship, 2023.
· Best Workshop Paper at KDD Applied Data Science in Healthcare (DSHealth) Workshop, 2021
· Best Resource Paper at International Semantic Web Conference (ISWC), 2020.
· One of the Top 6 Best Posters at MIT-IBM AI Research Week, 2019.
· Best Presentation and Best Research Report Award at Intl. Semantic Web Summer School (ISWS), 2018.

LEADERSHIP & COMMUNITY EXPERIENCE

Rensselaer Polytechnic Institute   Troy, NY
Project Lead, User-Centered and Knowledge-Enabled Explainability, HEALS   Aug 2019 – Aug 2023
· Spearheaded the end-to-end development of explainable AI solutions for clinical use cases
· Authored publications including book chapters, conference and journal papers with IBM and RPI reserachers.
· Mentored undergraduate students for implementing well-thought out portions of our research project.

Reviewer
· Reviewed for several top-tier AI conferences (WebSci 2024; KDD 2021; AAAI 2020) and journals (AIM J. 2023, 2024; SWJ 2023; AI J. 2020).

Organization Leadership
· Co-lead a team at the NLM Pubmed Hackathon, 2022.
· Social Media Chair, Comp. Science Graduate Council, RPI, Aug. 2021 - May 2023
· Member of the organizing committee for MIT Media Labs event (2012) and code Hackathon(2012-2014)

SELECTED PRESENTATIONS

· (Invited Speaker) Mayo Clinic - Dept. of Artificial Intelligence and Informatics on "Representing and Supporting User-Centered Explanations of AI Systems"   Mar 2024
· (Poster) ISWC on "An Ontology-Enabled Approach For User-Centered and Knowledge-Enabled Explanations of AI Systems"   2023
· (Poster) MCBK on "Supporting User-Centric Explanation Types for Clinical Reasoning"   2020
· (Poster) ISWC on "Explanation Ontology: A Model of Explanations for User-Centered AI"   2020
· (Poster) MIT-IBM AI Research Week on "Making Study Populations Visible through Knowledge Graphs" 2019

SELECTED PUBLICATIONS

1. **Informing clinical assessment by contextualizing post-hoc explanations of risk prediction models in type-2 diabetes**
   Shruthi Chari, Prasant Acharya, Daniel M. Gruen, Olivia Zhang, Elif K. Eyigoz, Mohamed Ghalwash, Oshani Seneviratne, Fernando S. Saiz, Pablo Meyer, Prithwish Chakraborty, Deborah L. McGuinness
   Artificial Intell. Medicine J., 102498; 2023

2. **[Best Paper] Explanation Ontology: A Model for User-Centric Explainable AI**
   Shruthi Chari, Oshani Seneviratne, Daniel M. Gruen, Morgan Foreman, Amar K Das, Deborah L. McGuinness
   In International Semantic Web Conference (pp. 228 - 243); 2020 [Best paper award]

3. **Directions for Explainable Knowledge-Enabled Systems**
   Shruthi Chari, Oshani Seneviratne, Daniel M. Gruen, Deborah .L McGuinness
   Knowledge Graphs for eXplainable AI – Foundations, Applications and Challenges. Studies on the Semantic Web, pp 245 - 261; 2020

4. **Knowledge Extraction of Cohort Characteristics in Research Publications**
   Jade DS Franklin, Shruthi Chari, Morgan Foreman, Oshani Seneviratne, Jamie P. McCusker, Amar K. Das, Deborah L. McGuinness
   In Proc. of 2020 AMIA Annual Symposium; 2020