Emily LeBlanc, PhD

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Recent Positions

Date	Position	Institution
January 2022 – Present	Software Developer	Independent
November 2019–November 2021	Computer Scientist Karles Fellow	U.S. Naval Research Laboratory *Navy Center for Applied Research in Artificial Intelligence*
January 2019–March 2019	Lead Teaching Assistant	Drexel University *College of Computing and Informatics*
March 2017–June 2019	Ph.D. Candidate	Drexel University *College of Computing and Informatics*
June 2016–September 2016, June 2015–September 2015	Graduate Research Intern	GE Global Research
September 2013–December 2018	Graduate Research Assistant	Drexel University *College of Computing and Informatics*

Research Experience

Flavor Brain AI (independent) – 2022-present Exploring how Artificial Intelligence can be used to augment human expertise. Developing approaches and software prototypes.

Towards a Cognitive Model of Norm-guided Blaming (U.S. Naval Research Laboratory) – 2019-2021
Researcher in the Interactive Systems section of the Navy Center for Applied Research in Artificial Intelligence. Project funded by the Jerome and Isabella Karle Distinguished Scholar Fellowship.

Explaining Actual Causation via Reasoning About Actions and Change (Drexel University) – 2015-2019
Researched and developed a novel theoretical framework for representing and reasoning about actual causation and investigated the framework's properties. Explored applications of the work in Question Answering and Information Retrieval.

Virtual Nondestructive Evaluation Laboratory for Highway Structures (Federal Highway Administration, Drexel University) – 2017-2019 Worked on a team to develop an interactive, web-based tool that allows users – engineers, researchers, students, service providers, and bridge owners and inspectors – to engage in simulations of real bridges.

Action-Centered Information Retrieval (Drexel University) – 2016-2018
Explored semantic linking of queries and documents for an IR task in which documents describe sequences of events and queries are about the state of the world after such events. Proposed an action

language based formalization and automation of the IR task using Answer Set Programming.

Natural Language Processing and Aviation Software (GE Global Research) – 2016
Application of previous Natural Language Processing work with the company to enable use of services across GE businesses. Co-inventor on an application related to aviation software.

Linguistic Analysis of Health Records (GE Global Research) – 2015
Research and application of Natural Language Processing techniques for discovering specific relationships in patient health records. Prototype automates the feature-based discovery of these relationships.

The Informatics of Making (NSF Inspire) – 2014
Investigation of representing and reasoning about materials science and engineering knowledge towards establishing formal information models to bridge design and additive manufacturing.

Content-Based Mobile Edge Networking (DARPA) – 2013
Development and support of military doctrine-based ontologies for use in specialized tactical edge MANETs (mobile ad-hoc networks).

Select Publications

- **Towards a Model of the Dynamics of Norm-guided Blaming.** Emily LeBlanc. *34th International Workshop on Qualitative Reasoning, 2021.*
- **Reasoning about Problems of Actual Causation using an Action Language Approach.** Emily LeBlanc, Marcello Balduccini, Joost Vennekens. *35th International Conference on Logic Programming (ICLP 2019), Technical Report, 2019.*
- **Explaining Actual Causation via Reasoning about Actions and Change.** Emily LeBlanc, Marcello Balduccini, Joost Vennekens. *16th edition of the European Conference on Logics in Artificial Intelligence (JELIA 2019), 2019.*
- **Action-Centered Information Retrieval.** Marcello Balduccini, Emily LeBlanc. *Theory and Practice of Logic Programming Journal, 2019.*
- **CASP Solutions for Planning in Hybrid Domains.** Marcello Balduccini, Daniele Magazzeni, Marco Maratea, Emily LeBlanc. *Theory and Practice of Logic Programming Journal, Special Issue on Constraint Logic Programming, 2016.*
- **Knowledge Representation, Natural Language Processing, and Question Answering Towards Domain-Specific Cognitive Computing.** Emily C. LeBlanc. Candidacy survey, available upon request.
- **Military Ontologies for Information Dissemination at the Tactical Edge.** Emily LeBlanc, Duc N. Nguyen, Marcello Balduccini, William C. Regli, Joseph B. Kopena, and Thomas Wambold. *In IJCAI15 Joint Ontology Workshops (JOWO), 2015.*
- **Towards a Content-Based Materials Science Discovery Network.** Emily C. LeBlanc, Marcello Balduccini, William C. Regli *Papers from the AAAI-2014 Workshop on Discovery Informatics, Quebec City, Quebec, July 2014.*

Patents

- US 2019/0073426 A1: *Action-centered Information Retrieval*, Marcello Balduccini and Emily LeBlanc.

Professional Skills

- **Software development:** Python, Clojure, Answer Set Programming, OWL/RDF/SPARQL, HTML/CSS, SQL, Java, C/C++
- **Tools/platforms:** React.js, Flask, Protégé, numpy, scipy, Pandas, AWS, Bash, LaTeX, MS Office, Git

Education

Ph.D.	June 2019	**Drexel University**	Computer Science
Master of Science	June 2017	**Drexel University**	Computer Science
Bachelor of Science	May 2013	**Temple University**	Computer Science

Membership and Service

1. Member of Texas Action Group (TAG), Upsilon Pi Epsilon Honors Society (UPE).
2. Program Committee member of the 16th International Conference on Logic Programming and Nonmonotonic Reasoning (LPNMR).
3. Co-organizer and chair of 1st, 2nd, 3rd, and 4th Workshop on Causal Reasoning and Explanation in Logic Programming (CAUSAL 2019-2022), a workshop that has been co-located with the International Conference on Logic Programming (ICLP) and International Conference on Logic Programming and Nonmonotonic Reasoning (LPNMR).
4. Conference Review: KR 2014, IJCAI 2015-KR, AAAI-15, KR 2015, IJCAI 2016, LPNMR 2016, AAAI-16, IJCAI 2016, ICLP 2016, KnowPros 2016, AAAI-17, ICLP 2017, PADL 2018, ICLP 2018, CogSci 2020, CogSci 2021, LPNMR 2022.
5. Journal Review: Theory and Practice of Logic Programming (2017), Annals of Mathematics and Artificial Intelligence (2018).