Jason Hemann — Curriculum Vitae

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Research interests teaching-oriented languages, constraint logic programming, neuro-symbolic AI, domain-specific languages, program synthesis, functional programming

Current

Seton Hall University, South Orange, NJ — 2022 – Present
Assistant Professor of Computer Science

Education

Indiana University, Bloomington, IN — 2010 – 2020
PhD in Computer Science, Minor in Logic
Thesis: *Constraint microKanren in the CLP Scheme*
Advisor: Dan Friedman
MS in Computer Science

Trinity University, San Antonio, TX — 2003 – 2007
BS in Computer Science, Philosophy
BA in History

Experience

Seton Hall University, South Orange, NJ — 2022–Present
Assistant Professor of Computer Science

Northeastern University, Boston, MA — 2018–2022

Assistant Teaching Professor	2021–2022
Lecturer	2020
Part-time Lecturer	2020
Visiting Scholar	2019
Clinical Instructor	2018–2019

Rose-Hulman Institute of Technology, Terre Haute, IN — 2017–2018
Visiting Faculty

Funding

PI—CISE CRII (NSF `CCF-2348408`)	$175,000	2024
PI—NSF REU Supplemental to `CCF-2348408`	$20,000	2024
Co-PI—SHU Academy Initiative Grant	$19,000	2024
Co-PI—IU WPLC	$4,000	2017

Selected Publications

Books & Dissertations

[BD1] Jason Hemann and Stephen Chang, eds. *Trends in Functional Programming. Revised Selected Papers*. Springer Nature Switzerland, 2024. DOI: `10.1007/978-3-031-74558-4`.

[BD2] Jason Hemann. "Constraint microKanren in the CLP Scheme." PhD thesis. Indiana University, Bloomington, 01/2020.

[BD3] Daniel P. Friedman, William E. Byrd, Oleg Kiselyov, and Jason Hemann. *The Reasoned Schemer, 2nd Edition*. The MIT Press, 01/2018.

Conferences & Journals

[JC1] Brysen Pfingsten and Jason Hemann. "A Fine-Grained Small-Step Semantics for Interleaving Search." *Functional and Logic Programming*. Ed. by Michael Sperber and Ekaterina Komendatskaya. Forthcoming. Singapore: Springer Nature Singapore, 2026.

[JC2] Michael Ballantyne, Rafaello Sanna, Jason Hemann, William E. Byrd, and Nada Amin. "Multi-stage Relational Programming." *Proc. Conference on Programming Language Design and Implementation*. PLDI '25. (90/316 accepted 28.48%). 2025.

[JC3] Wouter Swierstra and Jason Hemann. "On the Correctness of Barron and Strachey's Cartesian Product Function." *Trends in Functional Programming*. Ed. by Jeremy Gibbons. 2025, pp. 392–405. DOI: 10.1007/978-3-031-99751-8_17.

[JC4] Michael Ballantyne, Mitch Gamburg, and Jason Hemann. "Compiled, Extensible, Multi-language DSLs (Functional Pearl)." *Proc. International Conference on Functional Programming*. ICFP '24. (35/106 accepted 33.01%). 2024. DOI: 10.1145/3674627.

[JC5] Jason Hemann and Daniel P. Friedman. "Nearly Macro-free microKanren." *Trends in Functional Programming*. Ed. by Stephen Chang. Cham: Springer Nature Switzerland, 2023, pp. 72–91.

[JC6] Daniel Schwab, Logan Cole, Karna Desai, Jason Hemann, Kate Hummels, and Adam Maltese. "A Summer Stem Outreach Program Run By Graduate Students: Successes, Challenges, And Recommendations For Implementation." *Journal of Research in STEM Education* 4 (2 12/2018), pp. 117–129.

[JC7] Jason Hemann, Daniel P. Friedman, William E. Byrd, and Matthew Might. "A Small Embedding of Logic Programming with a Simple Complete Search." *Proc. of DLS'16*. Amsterdam, Netherlands: ACM, 11/01/2016. DOI: 10.1145/2989225.2989230.

Complete publication list available via ORCID: 0000-0002-5405-2936.

Invited Talks & Colloquia

[T1] Jason Hemann and Brysen Pfingsten. *The semantics of miniKanren*. Saint Petersburg State University, Online. 11/12/2025.

[T2] Jason Hemann. *Challenges in the Design and Implementation of Teaching Languages for EDSLs*. Scheme Workshop co-located with ICFP. 09/07/2024.

[T3] Jason Hemann. *Tutorial on Program Transformations*. Scheme Workshop co-located with ICFP. 09/07/2024.

[T4] Jason Hemann. "Designing Flexible Programming Assignments to Fit Students Needs." 2022 Gradescope Summit: Building Better Assessments. 04/26/2022.

[T5] Jason Hemann. *Implementing a Kanren From the Ground Up*. NUSHackers @ National University of Singapore. 02/05/2021.

Service

Scholarly

Program committees: TFP 2023, 2024 (chair), 2025 (gc), 2026 (cc); miniKanren Workshop 2019, 2020 (chair), 2022, 2024, 2025 (publicity); Scheme Workshop 2014 (chair), 2016, 2019, 2020 (publicity), 2023; IFL 2024, 2025; ELS 2024, 2025, 2026; Racketcon (mc) 2025, NSF FMitF panel 2024; PEG 2.0 2025; FLOPS 2026; DoD NDSEG panel 2025, 2026.

Steering committees: miniKanren Workshop (2019–present); TFP (2024–present); Scheme Workshop (2023–present).

Academic committees and working groups: miniKanren Seminar (2022–present); Prolog in Education Group 2.0 (2024–present).

Reviewer: J. Sys. Soft. 2025, 2026; JFP 2024; AI Magazine 2024; ICLP 2023; *Programming* 2021; CPP 2019; ML 2016; ICFP 2015.

Editor: Proceedings of Trends in Functional Programming 2024.

Further details of institutional service are available upon request.

Academic Presentations and Contributions

Workshop Papers & Technical Reports

[W1] Brysen Pfingsten and Jason Hemann. "Visualizing miniKanren Search with a Fine-Grained Small-Step Semantics." *Proc. of the 2025 Workshop on miniKanren and Relational Programming*. 2025.

[W2] Brett Schreiber, Brysen Pfingsten, and Jason Hemann. "Six Ways to Implement Divisibility by Three in miniKanren." *Proc. of the 2024 Workshop on miniKanren and Relational Programming*. 2024. doi: 10.48550/arXiv.2408.16259.

[W3] Jason Hemann and Daniel P. Friedman. "Some Criteria for Implementing Disjunction and Conjunction in Shallow microKanren Embeddings." *24th International Symposium on Trends in Functional Programming*. Boston, Massachusetts, 01/14/2023.

[W4] Jason Hemann and Daniel P. Friedman. "Some Criteria for Implementations of Disjunction and Conjunction in microKanren." *Proc. of the 2022 Workshop on miniKanren and Relational Programming*. 2022.

[W5] Jason Hemann and Dmitri Boulytchev, eds. *Proceedings of the 2020 Workshop on miniKanren and Relational Programming, Northeastern University Technical Report NU-CCIS-2021-001*. Online: Department of Computer Science, Northeastern University, 08/13/2021.

[W6] Jason Hemann and Daniel P. Friedman. "Some Novel miniKanren Synthesis Tasks." *Proc. of miniKanren '20*. Digital. Online, 08/27/2020.

[W7] Jason Hemann and Daniel P. Friedman. "A Framework for Extending microKanren with Constraints." *Joint Proc of WLP'15/'16/WFLP'16 29th*. Ed. by Sibylle Schwarz and Janis Voigtländer. Vol. 234. EPTCS. Open Publishing Association, 01/01/2017, pp. 135–149. doi: 10.4204/EPTCS.234.10.

[W8] Jason Hemann and Daniel P. Friedman. "Deriving Pure, Functional One-Pass Operations for Processing Tail-Aligned Lists." *Proc. of Scheme '16*. Nara, Japan, 09/18/2016.

[W9] Jason Hemann and John Clements, eds. *Proceedings of the 2014 Workshop on Scheme and Functional Programming, Indiana University Technical Report TR718*. Washington, D.C., USA: Department of Computer Science, Indiana University, 09/11/2015.

[W10] Jason Hemann and Daniel P. Friedman. "A Framework for Extending microKanren with Constraints." *Proc. of Scheme '15, Northeastern University Technical Report NU-CCIS-2016-001*. Ed. by Andrew W. Keep and Ryan Culpepper. 09/04/2015.

[W11] Jason Hemann, Cameron Swords, and Lawrence S Moss. "Two Advances in the Implementations of Extended Syllogistic Logics." *Joint Proc. of NLPAR'15/LNMR'15*. Ed. by Marcello Balduccini, Alessandra Mileo, Ekaterina Ovchinnikova, Alessandra Russo, and Peter Schüller. Lexington, Kentucky, USA, 09/27/2015, pp. 1–15.

[W12] Daniel Brady, Jason Hemann, and Daniel P. Friedman. "Little Languages for Relational Programming." *Proc of Scheme '14, Indiana University Technical Report TR718*. Washington, D.C., USA, 11/19/2014, pp. 54–64.

[W13] Jason Hemann and Daniel P. Friedman. "μKanren: A Minimal Functional Core for Relational Programming." *Proc. of Scheme '13*. Digital. Alexandria, Virginia, USA, 11/13/2013.

[W14] Jason Hemann and Daniel P. Friedman. "λ^*: Beyond Currying." *Proc. of Scheme '13*. Digital. Alexandria, Virginia, USA, 11/13/2013.

[W15] Jason Hemann and Eric Holk. "Visualizing the Turing Tarpit." *Proc. of FARM '13*. FARM '13. Boston, Massachusetts, USA: ACM, 2013, pp. 71–76. DOI: 10.1145/2505341.2505348.

[W16] Jason Hemann, Fatma Mili, and Paul Myers. "Synchronized Energy Efficient Clustering of Wireless Sensor Networks." *Proc. of NCUR 2007*. San Rafael, California, 04/14/2007.

Institutional Talks & Colloquia

[C1] Jason Hemann. *A Fine-grained Small-step Semantics for Interleaving Search*. Departmental Colloquium, Seton Hall University, South Orange, NJ. 02/13/2026.

[C2] Jason Hemann. *Staged Relational Programming*. Departmental Colloquium, Seton Hall University, South Orange, NJ. 04/11/2025.

[C3] Jason Hemann. *Gradescope Demo*. Digital Humanities Group Meeting, Seton Hall University. 11/15/2024.

[C4] Jason Hemann. *Gradescope Demo*. New Approaches to Assessment Summer Series, Seton Hall University. 06/06/2024.

[C5] Jason Hemann. *Gradescope Demo*. Teaching, Learning, and Technology Center (TLTC) Workshop, Seton Hall University. 05/02/2024.

[C6] Jason Hemann. *Computing Disjunctions and Conjunctions for a Language Implementation*. Departmental Colloquium, Seton Hall University, South Orange, NJ. 01/2023.

[C7] Jason Hemann. *Efficient, Extensible, and Embedded Logic Programming*. Departmental Colloquium, Seton Hall University, South Orange, NJ. 10/20/2023.

[C8] Jason Hemann. *MicroLearning and NanoLearning*. Digital Humanities Faculty Learning Group, Seton Hall University. 05/05/2023.

Presentations & Demonstrations

[PD1] Jason Hemann and Michael Ballantyne. *Compiled, extensible miniKanren as part of a multi-language*. miniKanren Seminar, Online. 04/30/2024.

[PD2] Jason Hemann and Daniel P. Friedman. "Some Criteria for Implementing Disjunction and Conjunction in Shallow microKanren Embeddings." *24th International Symposium on Trends in Functional Programming*. Boston, Massachusetts, 01/14/2023.

[PD3] Daniel P. Friedman and Jason Hemann. "Implementing a microKanren." *CodeMesh 2016*. London, England, 11/04/2016.

[PD4] Daniel P. Friedman and Jason Hemann. "From Functions To Relations in miniKanren." *Øredev 2015*. Malmö, Sweden, 11/03/2015.

[PD5] Daniel P. Friedman and Jason Hemann. "Generating a Quine." *Midwest PL Summit '15*. West Lafayette, Indiana, USA, 12/04/2015.

[PD6] Daniel P. Friedman and Jason Hemann. "How to be a Good Host: miniKanren as a Case Study." *Curry On 2015*. Prague, Czech Republic, 07/07/2015.

[PD7] Daniel P. Friedman and Jason Hemann. "How to Host CLP (Without Much Hassle)." *Lambda Jam 2015*. Chicago, Illinois, USA, 07/14/2015.

[PD8] Daniel P. Friedman and Jason Hemann. "Rapidly Rolling a Relational DSL." *Øredev 2015*. Malmö, Sweden, 11/05/2015.

[PD9] Daniel P. Friedman and Jason Hemann. "Roll Your Own Relational DSL: A Logic Programming Language in Less than 40 Lines." *Lambda Jam 2014*. Chicago, Illinois, USA, 07/22/2014.

[PD10] Daniel P. Friedman and Jason Hemann. "Write the Other Half of Your Program: From Functional to Logic." *Strange Loop 2014*. St. Louis, Missouri, USA, 09/18/2014.

[PD11] Daniel P. Friedman and Jason Hemann. "It's Only Quine Time." *Programming Languages Fest*. Bloomington, Indiana, USA, 10/25/2013.

[PD12] Daniel P. Friedman and Jason Hemann. "The Art of Several Interpreters, Quickly." *Lambda Jam 2013*. Chicago, Illinois, USA, 07/08/2013.

[PD13] Jason Hemann. "A Typed Trivalent Logic to Resolve Category Mistakes." *North Georgia Student Philosophy Conference*. Kennesaw, Georgia, USA, 04/07/2007.

Doctoral Consortia

[DC1] Jason Hemann, Daniel P. Friedman, William E. Byrd, and Matt Might. "A Simple Complete Search for Logic Programming." *Technical Communications of the 33rd International Conference on Logic Programming (ICLP 2017)*. Ed. by Ricardo Rocha, Tran Cao Son, Christopher Mears, and Neda Saeedloei. Vol. 58. Melbourne, Australia: OASIcs, 2018, 14:1–14:8. DOI: `10.4230/OASIcs.ICLP.2017`.

Posters

[Po1] Brysen Pfingsten and Jason Hemann. *A Formal Model and Interactive Visualization of miniKanren Search Semantics*. Poster, DataLab Presentation, Seton Hall University. 04/24/2025.

[Po2] Brysen Pfingsten and Jason Hemann. *A Formal Model and Interactive Visualization of miniKanren Search Semantics*. Poster, Department of Mathematics and Computer Science Petersheim Poster Session, Seton Hall University. 04/25/2025.

[Po3] Brysen Pfingsten and Jason Hemann. *A Visualizer for Debugging and Understanding Logic Programming through Super-granular Small-Step Evaluation Semantics*. Poster, ICFP Student Research Competition (*Second Place*). 10/13/2025.

[Po4] Brysen Pfingsten and Jason Hemann. *Visualizing miniKanren Search with a Fine-Grained Small-Step Semantics*. Poster, Augustine Undergraduate Research Symposium. SHU Dept. Chem and Biochem. 12/09/2025.

[Po5] Jason Hemann, Daniel P. Friedman, William E. Byrd, and Matt Might. *A Small Embedding of Logic Programming with a Simple Complete Search*. Poster presented at SPLASH '16, Nov. 2, 2016, Amsterdam, The Netherlands. 2016.

[Po6] Karna Desai, Jing Yang, and Jason Hemann. *Foundations in Science and Mathematics Program for Middle School and High School Students*. Poster presented at AAS Meeting #227, Jan. 4-8, 2016, Kissimmee, Florida, USA. 2016.

Panels

[Pa1] Jason Hemann, Dmitri Boulychev, Michael Arntzenius, and Santiago Cuellar. *Frontiers: What's next for miniKanren and Relational Programming?* Panel Discussion at 2025 miniKanren Workshop, Oct. 17, 2025, Singapore. 2025.

[Pa2] Deyaaeldeen Almahallawi, Jason Hemann, Rin Metcalf, and Fatemeh Sharifi. *Associate Instructor Panel*. Panel Discussion IU SOIC Graduate Recruiting, Feb. 24, 2017, Bloomington, Indiana, USA. 2017.

[Pa3] Charles Pope and Jason Hemann. *Associate Instructor Panel*. Panel Discussion at IU SOIC Associate Instructor Training, Sept. 11, 2015, Bloomington, Indiana, USA. 2015.

Interviews

[I1] Mary Balkun. *AI Academy Podcast*. Faculty Matters. 02/17/2025.

[I2] Edna Pressler. *Teaching Large Classes: Grading and Feedback in the Large Class*. 07/2022.

[I3] Aditi Peyush. *Classroom Q & A: Dr. Jason Hemann and Custom Programming*. 01/2021.

[I4] Julia Unis and Daniella Fernandes. *Transforming Grading with Gradescope*. 07/2021.

[I5] Eric Normand. *CodeMesh 2016 Talk Interview*. PurelyFunctional. 10/12/2016.

[I6] Eric Normand. *Pre-conj Scheme '14 Interview*. LispCast. 11/17/2014.

Courses Taught

- ◇ Logic & Limits to Knowledge – 2026 (**Developed**)
- ◇ Artificial Intelligence – 2025 (**Developed**)
- ◇ Data Structures & Algorithms – 2023–2025
- ◇ Intro to CS – 2022–2025
- ◇ Relational & Logic Programming – 2021 (**Developed**)
- ◇ Theory of Computation – 2021
- ◇ Logic & Computation – 2020, 2021
- ◇ Object-oriented Development II – 2020
- ◇ Object-oriented Development – 2019, 2021, 2023–2025
- ◇ Software Engineering – 2018, 2020, 2022, 2023, 2025
- ◇ Programming Languages – 2017–2018, 2022, 2024

AWARDS & RECOGNITIONS

Graduate Travel Awards

2017	IJCAI-17 Travel Grant; CP/ICLP/SAT Doctoral Program Travel Award
2016	PLMW Travel Award (SPLASH 2016); SIGPLAN PAC Travel Award (SPLASH 2016); Scheme 2016 Travel Scholarship; SIGPLAN PAC Travel Award (ICFP 2016)
2015	SIGPLAN PAC Travel Award (ICFP 2015); NSF Travel Award (ECOOP 2015)
2014	FLoC Travel Award (Vienna Summer of Logic); ICLP Summer School Travel Award
2013	Scheme 2013 Travel Scholarship; SIGPLAN PAC Travel Award (ICFP 2013)
2012	NASSLLI 2012 Travel Award; OPLSS Housing Grant; NECSS 2012 Student Sponsorship

Other Awards

2020	IU Graduate Area Certificate in Pure & Applied Logic
2015	IU SOIC Associate Instructor of the Year
2017	IU Women's Philanthropy Leadership Council Award (FSM)
2014	IU East Online Teaching Certificate Program (Level 1)

Awards Declined

- 2023 SHU TLTC Faculty Innovation Grant 2023 (Traditional)
- 2023 SHU BTSI Sponsorship

Software Evaluations and Reviews

- `codeTogether`
- `Gradescope`–Gradescope Ambassador program
- `zzBots`