# Jason Hemann — Curriculum Vitae


| | |
|---|---|
| Email | jason.hemann@shu.edu |
| Website | hemann.pl |
| Phone | +1 713 702 7524 |


**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] 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.

[JC2] Wouter Swiestra and Jason Hemann. "On the Correctness of Barron and Strachey's Cartesian Product Function." *Trends in Functional Programming*. Ed. by Jeremy Gibbons. 2025. DOI: 10.1007/978-3-031-99750-1.

[JC3] 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.

[JC4] 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.

[JC5] 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.

[JC6] 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. *Challenges in the Design and Implementation of Teaching Languages for EDSLs*. Scheme Workshop co-located with ICFP. 09/07/2024.

[T2] Jason Hemann. *Tutorial on Program Transformations*. Scheme Workshop co-located with ICFP. 09/07/2024.

[T3] Jason Hemann. "Designing Flexible Programming Assignments to Fit Students Needs." 2022 Gradescope Summit: Building Better Assessments. 04/26/2022.

[T4] 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); miniKanren Workshop 2019, 2020 (chair), 2022, 2024, 2025 (publicity); Scheme Workshop 2014 (chair), 2016, 2019, 2020 (publicity), 2023; IFL 2024, 2025; ELS 2024; NSF FMitF panel 2024; PEG 2.0 2025; FLOPS 2026; DoD NDSEG panel 2024.

**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. Soft. Sys. 2025; JFP 2024; AI Magazine 2024; ICLP 2023; *Programming* 2021; CPP 2019; ML 2016; ICFP 2015.
**Editor** Proceedings of Trends in Functional Programming 2024.

| | | |
|---|---|---|
| University | Digital Humanities Committee, SHU | 2024–2025 |
| | Digital Humanities Faculty Learning Community, SHU | 2024–2025 |
| | Dean's Committee on Research Computing, SHU | 2024–2025 |
| | AI Certificate Working Committee, SHU | 2024–2025 |
| | Faculty Senate Information Technology Committee, SHU | 2024–2025 |
| | Computer Science Curriculum Committee, SHU | 2024–2025 |
| | Teaching Learning Technology Committee, SHU | 2023–2025 |
| | – Artificial Intelligence Subcommittee | 2024–2025 |
| | – Emerging Trends Subcommittee | 2024–2025 |
| | Nominations & Elections Committee, SHU | 2024–2025 |
| | CS Hiring Committees (AI, DB, ML), SHU | 2023–2024 |
| | Petersheim Undergraduate Research Symposium, SHU | 2022–2024 |
| Outreach | ACM SIGPLAN Student Chapter (Faculty Sponsor), SHU | 2024–2025 |
| | Women Who Code, SHU | 2022–2024 |
| | Women's Community of Code, NEU | 2021–2022 |
| | Foundations in Science and Mathematics, IU | 2013–2017 |

Further details of institutional service are available upon request.

## Academic Presentations and Contributions

### Workshop Papers & Technical Reports

[W1] 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.

[W2] 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.

[W3] 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.

[W4] 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.

[W5] Jason Hemann and Daniel P. Friedman. "Some Novel miniKanren Synthesis Tasks." *Proc. of miniKanren '20*. Digital. Online, 08/27/2020.

[W6] 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.

[W7] 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.

[W8] 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.

[W9] 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.

[W10] 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.

[W11] 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.

[W12] Jason Hemann and Daniel P. Friedman. "$\mu$Kanren: A Minimal Functional Core for Relational Programming." *Proc. of Scheme '13*. Digital. Alexandria, Virginia, USA, 11/13/2013.

[W13] Jason Hemann and Daniel P. Friedman. "$\lambda^*$: Beyond Currying." *Proc. of Scheme '13*. Digital. Alexandria, Virginia, USA, 11/13/2013.

[W14] 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.

[W15] 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. *Staged Relational Programming*. Departmental Colloquium, Seton Hall University, South Orange, NJ. 04/11/2025.

[C2] Jason Hemann. *Gradescope Demo*. Digital Humanities Group Meeting, Seton Hall University. 11/15/2024.

[C3] Jason Hemann. *Gradescope Demo*. New Approaches to Assessment Summer Series, Seton Hall University. 06/06/2024.

[C4] Jason Hemann. *Gradescope Demo*. Teaching, Learning, and Technology Center (TLTC) Workshop, Seton Hall University. 05/02/2024.

[C5] Jason Hemann. *Computing Disjunctions and Conjunctions for a Language Implementation*. Departmental Colloquium, Seton Hall University, South Orange, NJ. 01/2023.

[C6] Jason Hemann. *Efficient, Extensible, and Embedded Logic Programming*. Departmental Colloquium, Seton Hall University, South Orange, NJ. 10/20/2023.

[C7] 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. 10/13/2025.

[Po4] 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.

[Po5] 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] 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.

[Pa2] 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*

- ◇ 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

### *Other Education*

| | |
|---|---|
| 2024 | Scottish Programming Languages & Verification Workshop |
| 2023 | Online Teaching Certificate Program (Seton Hall University) |
| 2021 | Indian SAT Winter School |
| 2020 | SMT SAT School |
| 2016 | SPLASH Programming Languages Mentoring Workshop |
| 2015 | PLT Redex Summer School |

2015 ECOOP Research Summer School
2014 ICLP Computational Logic Summer School
2014 IU East Online Teaching Certificate Program (Level 1)
2012 Oregon Programming Languages Summer School
2012 NASSLLI (North American Summer School in Logic, Language and Information)

## 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`