

Farzaneh Derakhshan

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RESEARCH INTERESTS

Programming Languages, Formal Methods, Language-based Security, Type Theory, Proof Theory.

PROFESSIONAL APPOINTMENTS

Illinois Institute of Technology, **Assistant Professor**, Chicago, IL Starting August 2023
Computer Science Department.

Carnegie Mellon University, **Postdoctoral Fellow**, Pittsburgh, PA June 2021 - July 2023
Computer Science Department & CyLab Security and Privacy Institute.
Advisors: *Limin Jia, Stephanie Balzer.*

EDUCATION

Carnegie Mellon University, **Ph.D. in Pure and Applied Logic**, Pittsburgh, PA Fall 2016 - Spring 2021
Advisor: *Frank Pfenning* Thesis: *Session-Typed Recursive Processes and Circular Proofs.*

Carnegie Mellon University, **M.Sc. in Computer Science—Research**, Pittsburgh, PA Fall 2016 - Spring 2019
Advisor: *Frank Pfenning* Thesis: *Circular proofs as Session-Typed Processes: A Local Validity Algorithm.*

University of Tehran, **M.Sc. in Computer Science**, Tehran, Iran. Fall 2013 - Spring 2016
Thesis: *Uniform Interpolation in Substructural Logics.*

University of Tehran, **B.Sc. in Computer Science**, Tehran, Iran. Spring 2009 - Fall 2013
Dual-Degree Honors program. Thesis: *Martin-Lof's Intuitionistic Type Theory.*

Tehran University of Medical Sciences, **M.D., Medicine**, Tehran, Iran. Fall 2007 - Fall 2015
M.D. Thesis: *Design and implementation of a web-based CNS Tumor Registry in main hospitals of Tehran University of Medical Sciences.*

PUBLICATIONS

F. Derakhshan, M. Dotzel, M. Surbatovich, and L. Jia. *Modal crash types for intermittent computing.* 32nd **European Symposium on Programming (ESOP)** 2023.

F. Derakhshan, Z. Zhang, A. Vasudevan, and L. Jia. *Towards end-to-end verified TEEs via verified interface conformance and certified compilers.* **IEEE Computer Security Foundations Symposium (CSF)**, 2023.

F. Derakhshan, F. Pfenning, *Circular proofs as Session-Typed Processes: A Local Validity Condition.* **Logical Methods in Computer Science (LMCS)** 18, 2022.

F. Derakhshan, S. Balzer, L. Jia, *Session Logical Relations for Noninterference.* 36th Annual ACM/IEEE Symposium on **Logic in Computer Science (LICS)**. Pages 1-14. IEEE 2021.

W. Sieg, **F. Derakhshan**, *Human-centered automated proof search.* **Journal of Automated Reasoning (JAR)** 65.8, 1153-1190, 2021.

M. Alizadeh, **F. Derakhshan**, H. Ono, *Uniform Interpolation in Substructural Logics.* **The Review of Symbolic Logic (RSL)**, Vol. 7, Issue 3, pp. 455 - 483, 2014.

WORKS UNDER SUBMISSION AND IN PREPARATION (drafts available upon request)

F. Derakhshan, S. Balzer, and Y. Yao. *Declassification with Progress-Sensitive Noninterference*.

F. Derakhshan, S. Balzer, *Recursive session logical relations.under submission* - LICS 2023

F. Derakhshan, F. Pfenning, *Circular Proofs in First-Order Linear Logic with Least and Greatest Fixed Points*

TEACHING EXPERIENCES

Instructor - **80-210. Logic and Proofs**, Carnegie Mellon University. Spring 2019, Summers 2017-2020

Instructor - **80-211. Logic and Mathematical Inquiry**, Carnegie Mellon University. Fall 2018

Teaching Assistant - **15-814. Types & Programming Languages** - Frank Pfenning, Carnegie Mellon University. Fall 2019

Teaching Assistant - **80-311. Undecidability and Incompleteness** Wilfried Sieg, Carnegie Mellon University. Fall 2017, Springs 2018 & 2020

Teaching Assistant - **80-310. Formal Logic** - Steve Awodey, Carnegie Mellon University Spring 2017

Teaching Assistant - **Theory of Computation, Language and Automata Theory, Modal Logics** - Majid Alizadeh and Hassan Shafiei, University of Tehran. 2011-2015

PROFESSIONAL SERVICE

Program committee member of Asian Symposium on Programming Languages and Systems (APLAS), 2022.

Program committee member of ECOOP Doctoral Symposium, 2022.

Program committee member of 13th Workshop on Programming Language Approaches to Concurrency & Communication cEntric Software (PLACES), 2022.

Panelist in PLMW2021, Panel: Navigating PhD studies, 2021.

TALKS AND PRESENTATIONS

Towards End-to-End Verified TEEs via Verified Interface Conformance and Interface-Preserving Compilers. **F. Derakhshan**, Z. Zhang, A. Vasudevan, L. Jia. **7th Workshop on Principles of Secure Compilation (PriSC 2023)**. Jan. 2023

Noninterference for session-typed processes. **F. Derakhshan**, S. Balzer, L. Jia. **16th Workshop on Programming Languages and Analysis for Security (PLAS 2021)**. Dec. 2021

Strong Progress for Session-Typed Processes in a Linear Metalogic with Circular Proofs. **F. Derakhshan**. **Online Logic Seminar**. Nov. 2020

Infinitary proof theory of first order linear logic with fixed points. **F. Derakhshan**. **Association for Symbolic Logic North American Annual Meeting (online)**. Special Session on Proof Theory. Mar. 2020

Computational interpretation of substructural proofs. **F. Derakhshan**. **Association for Symbolic Logic North American Annual Meeting**. Logic and Philosophy Special Session. May 2018

Uniform interpolation in weak Grzegorzczk logic and Gödel-Löb logic. M. Alizadeh, **F. Derakhshan**, H. Ono. **Association for Symbolic Logic (ASL)**, In the proceedings of Logic Colloquium 2015 (LC 2015). Jul. 2015

Uniform Interpolation in Basic Propositional Logic (BPL). M. Ardeshtir, M. Alizadeh, **F. Derakhshan**. **Annual Conference of Iranian Association of Logic**, Sharif University of Technology, Tehran, Iran. May 2013

TEACHING SEMINARS & WORKSHOPS

Eberly Center Teaching Excellence & Educational Innovation, Carnegie Mellon University.

As part of the **Future Faculty Program.**

Fall 2016 - Spring 2021

- Designing, Managing & Assessing Team Work. Jan. 2019
- Working Well One-on-One with Students. Aug. 2018
- Grading and Delivering Feedback on Quantitative Assignments. Aug. 2018
- Teaching Inclusively: Creating a Welcoming and Supportive Climate from Day One. Aug. 2018
- Designing for Online/Blended Learning (TEL Bootcamp). May 2017
- Creating Multimedia that Works for Learning (TEL Bootcamp) May 2017
- Using TEL to Extend the Classroom: A Deep Dive into Canvas. May 2017
- Strategies for Effective Instruction and Providing Feedback. Aug. 2016
- **Teaching Observation.** An Eberly colleague observed my “Logic and Mathematical Inquiry” course and gave constructive feedback. Oct. 2018
- **Early Course Feedback: Focus Groups.** An Eberly colleague gathered information from my students on how the “Logic and Mathematical Inquiry” course supports their learning. Oct. 2018

SELECTED HONORS AND AWARDS

LSEC Fellowship Award, *Philosophy department, Carnegie Mellon University*, Summers 2017-2019.

7th Place in nationwide graduate school entrance exam in Computer Science, May 2013, Iran.

11th Team in the *ACM ICPC Asia Regional Contest*, Tehran, Iran, 2012.

12th Team in the *ACM ICPC Asia Regional Contest*, Tehran, Iran, 2011.

Gold Medal in the Iranian National **Biology Olympiad**, Iran, 2006.

OTHER WORK EXPERIENCES

Medical Doctor, Preventive Medicine Clinic, Baharloo Hospital,
Tehran University of Medical Sciences, Tehran, Iran.

Nov. 2015 - May 2016

Medical Intern, Tehran University of Medical Sciences, Tehran, Iran.

Sep. 2013 - Mar. 2015