

Farzaneh Derakhshan

Assistant Professor, Illinois Institute of Technology (fd@iit.edu)

RESEARCH INTERESTS

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

PROFESSIONAL APPOINTMENTS

Illinois Institute of Technology, Assistant Professor, CHICAGO, IL AUGUST 2023 - PRESENT
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

L. LIU, **F. Derakhshan**, L. JIA, G. MORENO, M. KLEIN, *Quantified Underapproximation via Labeled Bunches*, **OOPSLA 2025** - ACCEPTED.

G. MORENO, M. KLEIN, S. SAHA, **F. Derakhshan**, L. JIA, *Towards Compositional Assurance of Large Cyber-Physical Systems*, **Workshop on Formal Arguments for Cps CerTification (FACCT) 2025**.

M. DOTZEL, **F. Derakhshan**, M. SURBATOVICH, L. JIA *Modal Crash Types for WAR-Aware Intermittent Computing*, **ACM Transactions on Programming Languages and Systems (TOPLAS)**v2025.

F. Derakhshan, S. BALZER, Y. YAO *Regrading Policies for Flexible Information Flow Control in Session-Typed Concurrency*, **European Conference on Object-Oriented Programming (ECOOP) 2024**.

B. VAN DEN HEUVEL, **F. Derakhshan**, S. BALZER *Information Flow Control in Cyclic Process Networks*, **European Conference on Object-Oriented Programming (ECOOP) 2024**.

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.

RESEARCH FUNDING & GRANTS

SaTC CORE NSF Collaborative - Award# 2350217, *Mixed Assurance Reasoning via Modal Logic*, 2024.

TEACHING

CS534. Types and Programming Languages, ILLINOIS TECH. SPRING 2025

CS440. Programming Languages and Translators, ILLINOIS TECH. FALL 2024

CS536. Science of Programming, ILLINOIS TECH. FALL 2023

80-210. Logic and Proofs, CARNEGIE MELLON UNIVERSITY. SPRING 2019, SUMMERS 2017-2020

80-211. Logic and Mathematical Inquiry, CARNEGIE MELLON UNIVERSITY. FALL 2018

ADVISING

Myra Dotzel PhD STUDENT, CARNEGIE MELLON UNIVERSITY (CO-ADVISED WITH LIMIN JIA). FALL 2021
- PRESENT

Lang Liu PhD STUDENT, ILLINOIS TECH. SPRING 2024 - PRESENT

Laya Fakher PhD STUDENT, ILLINOIS TECH (CO-ADVISED WITH STEFAN MULLER). FALL 2024 - PRESENT

Godha Pallavi Bhogadi MSc STUDENT, ILLINOIS TECH (CO-ADVISED WITH STEFAN MULLER). SPRING 2024 - PRESENT

Narasimha Karthik G MSc STUDENT, ILLINOIS TECH. SPRING 2024 - PRESENT

Akash Madhu MSc STUDENT, ILLINOIS TECH. SPRING 2025 - PRESENT

Griffin Colomer BSc STUDENT, ILLINOIS TECH. SPRING 2025 - PRESENT

PROFESSIONAL SERVICE

Organizer & Committee Chair

- **Organizing committee member** OF DAGSTUHL SEMINAR 26071 ON BEHAVIOURAL TYPES FOR RESILIENCE (FEB. 8 - FEB. 13, 2026).
- **Program committee (co-)chair** OF 16TH WORKSHOP ON PROGRAMMING LANGUAGE APPROACHES TO CONCURRENCY & COMMUNICATION CENTRIC SOFTWARE (PLACES) 2025.

Program Committee Member & Reviewer

- *Conferences*: LICS 2026, ESOP 2026, COORDINATION 2025, ICFP 2025, ECOOP 2025.
- *WORKSHOPS*: ICE 2025, PriSC 2025, TLLA 2024, PriSC 2024, APLAS 2022, ECOOP DOCTORAL SYMPOSIUM 2022, PLACES 2022.
- *JOURNALS*: ACM TRANSACTIONS ON PRIVACY AND SECURITY (TOPS) 2025.

Panels

- PANELIST IN PLMW 2021, PANEL: NAVIGATING PhD STUDIES.

Proposal/Thesis Committee Member

- ZICHAO ZHANG, CARNEGIE MELLON UNIVERSITY, 2025.
- SAJAD MEISAMI, ILLINOIS TECH, 2024. *Understanding Decentralized Applications From a Security Perspective*.

Departmental Service

- CO-CHAIR, CS SEMINAR COMMITTEE.
- MEMBER, GRADUATE STUDIES COMMITTEE.
- MEMBER, FACULTY HIRING COMMITTEE.
- MEMBER, PhD EXPERIENCE & RECRUITING COMMITTEE.

SELECTED TALKS

Modal Crash Types for Intermittent Computing. **F. Derakhshan**. Workshop on Principles, Theory, and Practice for Decentralized Applications (PLAID 2024). SEP. 2024

Session-Typed Recursive Processes and Infinitary Proofs. **F. Derakhshan**. Special session on the semantics of non-wellfounded and circular proofs (MFPS 2024). JUN. 2024

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