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# Dan Plyukhin

**Languages:** English, French  
**Citizenship:** USA, Canada

## Research Interests

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Programming Languages, Distributed Systems, Choreographic Programming, Actors

## Education

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**Ph.D. Computer Science** at University of Illinois Urbana-Champaign (UIUC) ······ 2024  
*Thesis:* Fault-Tolerant and Fault-Recovering Garbage Collection for the Actor Model  
*Committee:* Gul Agha (chair), Indranil Gupta, Tianyin Xu, and Philip Haller

**Ba.Sc. Computer Science & Mathematics** at University of Toronto (U of T) ······ 2017  
Graduated honours with high distinction

## Academic Appointments

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**Postdoctoral Researcher** at University of Southern Denmark (SDU) ······ 2022–Present  
Supervised by Fabrizio Montesi

**Adjunct Professor** at Illinois Institute of Technology (Illinois Tech) ······ Fall 2021  
Sole instructor for CS 440: Programming Languages and Translators (60 students)

## Major Software Projects

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**UIGC** distributed actor GC for Apache Pekko ······ [github.com/dplyukhin/uigc-pekko](https://github.com/dplyukhin/uigc-pekko)  
Principal author and maintainer

**Choral** choreographic programming in Java ······ [github.com/choral-lang/choral](https://github.com/choral-lang/choral)  
Contributor, author of the *Ozone* concurrency library

## Publications

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### *Journal Articles*

**CRGC: Fault-Recovering Actor Garbage Collection in Pekko.** Dan Plyukhin, Gul Agha, and Fabrizio Montesi. *Proceedings of the ACM on Programming Languages* PLDI (2025). [doi.org/10.1145/3729288](https://doi.org/10.1145/3729288).

**Relax! The Semilenient Core of Choreographic Programming (Functional Pearl).** Dan Plyukhin, Xueying Qin, and Fabrizio Montesi. *Proceedings of the ACM on Programming Languages* ICFP (2025). [doi.org/10.1145/3747538](https://doi.org/10.1145/3747538).

**A Scalable Algorithm for Decentralized Actor Termination Detection.** Dan Plyukhin and Gul Agha. *Logical Methods in Computer Science* 1 (2022). [doi.org/10.46298/lmcs-18\(1:39\)2022](https://doi.org/10.46298/lmcs-18(1:39)2022).

### Peer-Reviewed Conference Papers

**Ozone: Fully Out-of-Order Choreographies.** Dan Plyukhin, Marco Peressotti, and Fabrizio Montesi. In: *38th European Conference on Object-Oriented Programming, ECOOP 2024*. doi.org/10.4230/LIPIcs.ECOOP.2024.31.

**Scalable Termination Detection for Distributed Actor Systems.** Dan Plyukhin and Gul Agha. In: *31st International Conference on Concurrency Theory, CONCUR 2020*. doi.org/10.4230/LIPIcs.CONCUR.2020.11.

### Peer-Reviewed Workshop Papers and Extended Abstracts

**Poroutines: The Essence of Choreographic Programming?** Dan Plyukhin. In: *1st International Workshop on Choreographic Programming, CP@PLDI 2024*. Extended abstract.

**Concurrent garbage collection in the actor model.** Dan Plyukhin and Gul Agha. In: *Proceedings of the 8th ACM SIGPLAN International Workshop on Programming Based on Actors, Agents, and Decentralized Control, AGERE!@SPLASH 2018*. doi.org/10.1145/3281366.3281368.

### Other Manuscripts

**One-Click Decentralisation: Automated Synthesis of Microservice Choreographies.** Viktor Strate Kløvedal, Dan Plyukhin, Marco Peressotti, and Fabrizio Montesi. (2025). In preparation for PLDI 2026.

**Fault-Tolerant and Fault-Recovering Garbage Collection for the Actor Model: A Collage-Based Approach.** Dan Plyukhin. PhD thesis. University of Illinois Urbana-Champaign, USA (2024). hdl.handle.net/2142/124328.

### Talks

(Excluding talks for the above papers)

**Web Architecture Through The Ages: From Servers to Microservices** ..... 2025  
Invited talk at *University of Regensburg* (Software Engineering I)

**Garbage Collection in Erlang vs JVM/Akka** ..... 2023  
Podcast guest on *Elixir Wizards* by SmartLogic

**Actors, GADTs, and Burnout** ..... 2023  
Podcast guest on *Type Theory Forall*

**A Language for Low-Latency Distributed Systems** ..... 2023  
Invited talk at *Purdue PurPL Seminar*

**Making It Easier to Implement Correct Distributed Algorithms** ..... 2022  
Student talk at *BehAPI Summer School*

**Capabilities for Flexible and Concurrent Garbage Collection of Actors** ..... 2018  
Contributed talk at *Midwest PL Summit 2018*

**An Introduction to Network Programming** ..... 2018  
Workshop at *Illinois CS SAIL* (high school outreach event)

## Teaching

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### *Instructor*

**CS 440: Programming Languages and Translators (Illinois Tech)** ..... Fall 2021  
Sole instructor of record with one TA. Taught 60 students, fully remote using Discord and PrairieLearn. Developed curriculum, assignments, and lectures. Teaching reviews available at: [dplyukhin.github.io/files/plyukhin-cs440-fa2021-evals.pdf](https://dplyukhin.github.io/files/plyukhin-cs440-fa2021-evals.pdf)

*Midterm instructor rating:* 4.52/5 (29 reviews, 48% response)

*Final instructor rating:* 4.40/5 (10 reviews, 17% response)

### *Teaching Assistant*

**CS 421: Programming Languages and Compilers (UIUC)** ..... 2017–2022  
Taught 9 semesters, both remote and in-person. Held office hours and contributed to course development on Coursera and PrairieLearn platforms.

**CS 425: Distributed Systems (UIUC)** ..... Fall 2019  
Online M.Sc. section, Coursera. Graded exams and assignments, held office hours.

**CSC 240: Enriched Theory of Computation (U of T)** ..... Spring 2017  
Taught a biweekly lab, graded assignments and exams, held office hours.

**CSC 324: Principles of Programming Languages (U of T)** ..... Fall 2016  
Taught a weekly lab, graded assignments and exams, held office hours.

**MAT 246: Abstract Mathematics (U of T)** ..... Spring 2016  
Taught a weekly lab, graded assignments and exams, held office hours.

## Supervision and Mentorship

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### *Masters*

**Christian Hviid Nesting (SDU)** principal supervisor, with Fabrizio Montesi ..... 2025

**Steven Kolbeck Ensted (SDU)** with Marco Peressotti and Fabrizio Montesi ..... 2024

**Jonas Bruun Plesner (SDU)** with Marco Peressotti and Fabrizio Montesi ..... 2024

**Mathias Jensen (SDU)** with Marco Peressotti and Fabrizio Montesi ..... 2024

### *Undergraduate*

**Charles Kuch (UIUC)** Undergraduate Research Mentorship Program ..... 2020

**Jerry Wu (UIUC)** Undergraduate Research Mentorship Program ..... 2020

## Honors and Awards

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**Outstanding Teaching Assistant Award (UIUC) (Nomination)** ..... 2022

**Outstanding Teaching Assistant Award (UIUC) (Nomination)** ..... 2021

**Outstanding Teaching Assistant Award (UIUC) (Nomination)** ..... 2019

**Dean's List (U of T)** ..... 2017

<b>Undergraduate Research Experience (U of T) (<i>Research Grant</i>)</b> .....	2017
<b>University College Special In-Course Scholarship (U of T)</b> .....	2017
<b>Dean's List (U of T)</b> .....	2016
<b>Dean's List (U of T)</b> .....	2014

## Service

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### *Institutional*

<b>External Reviewer for POPL</b> .....	2025
<b>External Reviewer for EXPRESS/SOS</b> .....	2025
<b>External Reviewer for JLAMP</b> .....	2025
<b>Program Committee Member for ICST (Poster Track)</b> .....	2025
<b>External Reviewer for Journal of Computer Languages</b> .....	2023
<b>External Reviewer for ISPDC</b> .....	2022
<b>External Reviewer for JLAMP</b> .....	2019
<b>External Reviewer for COORDINATION</b> .....	2018

### *Community*

<b>Co-Host of the <i>Type Theory Forall</i> podcast</b> .....	2023–Present
<b>Seminar Organizer (SDU) for the <i>AICP Section</i></b> .....	2024–Present
<b>Member (UIUC) of the <i>Education Justice Project (EJP)</i></b> .....	2021–2024
<b>Mentor (UIUC) for the <i>Undergraduate Research Apprenticeship Program</i></b> ...	2019–2020
<b>Instructor (UIUC) for the <i>CS SAIL</i> high school outreach event</b> .....	2018
<b>Seminar Organizer (U of T) for the <i>Undergraduate Theory Group (UTG)</i></b> .....	2015–2017