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Dan Plyukhin

Citizenship: Canadian; US permanent resident

Education

2017-2023 (anticipated) Champaign, IL	**University of Illinois Urbana-Champaign (UIUC)** Ph.D. student
2013-2017 Toronto, ON	**University of Toronto (U of T)** Honours BA.Sc. Computer Science & Mathematics (*graduated with High Distinction*) GPA: 3.61/4.0
2009-2013 Bedford, NH	**Bedford High School** International Baccalaureate (IB) diploma GPA: 4.1/4.5

Publications

- Dan Plyukhin and Gul Agha. A Scalable Algorithm for Decentralized Actor Termination Detection. Extended version of CONCUR 2020 paper. Submitted to *Logical Methods in Computer Science, LMCS*.
- Dan Plyukhin and Gul Agha. Scalable Termination Detection for Distributed Actor Systems. In *Proceedings of the 31st International Conference on Concurrency Theory, CONCUR 2020*, Vienna, Austria, 2020.
- Dan Plyukhin and Gul Agha. Concurrent Garbage Collection in the Actor Model. In *Proceedings of the 7th ACM SIGPLAN International Workshop on Programming Based on Actors, Agents, and Decentralized Control, AGERE 2018*, Boston, MA, 2018.
- Alex V. Plyukhin and Dan Plyukhin. Random walks on uniform and non-uniform combs and brushes. *J. Stat. Mech. (2017) 073204*, 2017.
- Dan Plyukhin and Alex V. Plyukhin. Random walks with fractally correlated traps: Stretched exponential and power-law survival kinetics. *Phys. Rev. E 94, 042132*, 2016.
- Dan Plyukhin. Distributed reference counting for asynchronous shared memory. *Review of Undergraduate Computer Science (RUCS)*. Extended abstract, 2015.
- Dan Plyukhin and Alex V. Plyukhin. Correlations of correlations: Secondary autocorrelations in finite harmonic systems. *Phys. Rev. E 92, 042101*, 2015.

Programming experience

Proficient in Python, Javascript, C, Java, Scala, Haskell, OCaml, Elm, and SQL. I also have experience with C++, Clojure, Racket, Erlang, and Prolog.

Popular libraries and frameworks I have experience with include Node.js, React, Android, Wordpress, Django, Akka, and LLVM.

Talks

Sep 1 2020	**Scalable Termination Detection for Distributed Actor Systems** contributed talk at *CONCUR 2020* (Vienna, Austria)
July 11 2019	**Structured Distributed Programming** short talk at (Leicester, UK)
Nov 5 2018	**Capabilities for Flexible and Concurrent Garbage Collection of Actors** contributed talk at *AGERE! 2018* (Boston, MA)
Oct 12 2018	**Capabilities for Flexible and Concurrent Garbage Collection of Actors** short talk at *Midwest PL Summit 2018* (University of Wisconsin-Madison)
Apr 7 2018	**An Introduction to Network Programming** workshop at *UIUC CS SAIL* (high school outreach event)
Mar 28 2018	**Distributed Garbage Collection for the Actor Model** seminar at *UIUC Compiler Seminar*
Dec 20 2016	**Random Walks with Fractally Correlated Traps** short talk at *116th Statistical Mechanics Conference* (Rutgers University)
Oct 3 2016	**A Distributed Computing Primer** [link: youtu.be/c-MZHOuGBJc] short talk at *UTG Undergraduate CS Research Lightning Talks* (U of T)

Conferences and Workshops Attended

2019	*Summer School: Behavioural Approaches for API-Economy with Applications* at Leicester College, UK
2019	*Ninth Summer School on Formal Techniques* at Menlo College, CA
2018	*AGERE!@SPLASH 2018*
2018	*Midwest PL Summit 2018* at University of Wisconsin-Madison
2016	*116th Statistical Mechanics Conference* at Rutgers University
2016	*PyCon 2016*
2016	*Workshop on Homotopy Type Theory* at the Fields Institute
2016	*Symposium on Principles of Programming Languages (POPL)*
2016	*Programming Languages Mentoring Workshop (PLMW)*
2015	*Workshop on Integrating Dynamics and Stochastics* at Brown University
2012	*Workshop at the Institute for Security, Technology, and Society (ISTS)* at Dartmouth College

Awards

Fall 2019 **Teaching Assistant Award** (*Nominated*) from UIUC

Summer 2019 **Ninth Summer School on Formal Techniques** from SRI
Travel grant: $600

Fall 2018 **Midwest PL Summit 2018** from UW-Madison
Travel grant: $200

2016-2017 **Dean's List** from U of T
Recognition of exceptional academic achievement

Summer 2016 **PyCon 2016**

Travel grant: $400

Spring 2016 **PLMW 2016**
Travel grant: $520

2015-2016 **Dean's List** from U of T
Recognition of exceptional academic achievement

Fall 2015 **Undergraduate Workshop on Integrating Dynamics and Stochastics** from Brown University
Travel grant: $800

Summer 2015 **Undergraduate Toronto Research Experience** from U of T
Research grant: $6000

Spring 2015 **University College Special In-Course Scholarship** from U of T
Award: $250

2013-2014 **Dean's List** from U of T
Recognition of exceptional academic achievement

Professional Experience

Summer 2019
Web developer *National Center for Professional and Research Ethics (NCPRE)*

Developed prototype of an interactive graphical editor and viewer for exploring NCPRE content by following "pathways" between topics; made using React, d3.js, and Typescript.

Summer 2017
Freelance programmer

Developed a web scraper in Python using BeautifulSoup for researchers at the UIUC College of Business.

Summer 2014
Front-end developer *WWPass Corporation*

Contributed to a Firefox add-on in Javascript. Ported browser extension to Internet Explorer using F#.NET.

Spring 2013
Full-stack web developer *RightBid Research*

Developed a prototype spreadsheet web app using Django/Python.

Spring 2013
Full-stack web developer *Bedford Athletic Booster Club*

Developed a website using Django/Python with support for client content updates.

Research Experience

Summer 2020
Research assistant *supervised by Prof. Gul Agha (UIUC)*

Investigating programming language support for heterogeneous mobile sensor networks. Worked with an undergraduate to implement a garbage collection algorithm for the Akka framework. Supported by a grant from Sandia National Laboratories.

Spring-Fall 2018
Research assistant *supervised by Prof. Gul Agha (UIUC)*

Investigating types for safety and progress in the actor model of concurrency, including session types. Designed a concurrent garbage collection algorithm for distributed objects; peer-reviewed paper appeared at *AGERE! 2018*. Also worked on an optimizing compiler for distributed systems using Scala.

Spring-Summer 2016
Random walks *supervised by Prof. A. Plyukhin (Saint Anselm College)*

Investigated the survival probability of a random walker on a lattice interspersed with traps along a fractal. Peer-reviewed paper appeared in Physical Review E.

Wrote efficient multithreaded simulation code in C, making use of a novel algorithm for detecting trap sites.

Summer 2015
Distributed computing *supervised by Prof. Faith Ellen (U of T)*

Investigating a wait-free memory reclamation scheme for distributed shared memory. Extended abstract appeared in RUCS.

Winter 2014 - Summer 2015
Dynamical systems *supervised by Prof. A. Plyukhin (Saint Anselm College)*

Investigating dynamical autocorrelation functions in finite harmonic systems. Peer-reviewed paper appeared in Physical Review E.

Teaching Experience

Spring 2020; Fall 2020; Spring 2021
Teaching Assistant *for CS421: Programming Languages and Compilers (UIUC)*

Held weekly office hours. Created interactive assignments for students.

Fall 2019
Teaching Assistant *for CS425: Distributed Systems (UIUC)*

Held weekly online office hours for Coursera students. Graded assignments, demo projects, and exams.

Fall 2017
Teaching Assistant *for CS421: Programming Languages and Compilers (UIUC)*

Held office hours twice weekly. Contributed to the creation of tests, exams, and automatic grading thereof.

Spring 2017
Teaching Assistant *for CSC240: Enriched Theory of Computation (U of T)*

Taught a biweekly practical section, graded assignments and exams, and held office hours.

Fall 2016
Teaching Assistant *for CSC324: Principles of Programming Languages (U of T)*

Led a weekly lab, graded assignments and exams, and held office hours.

Winter 2016
Teaching Assistant *for MAT246: Abstract Mathematics (U of T)*

Taught a practical section of 60 students once a week. Graded tests and held office hours.

Community

Spring 2020
Graduate Mentor *for the Undergraduate Research Apprenticeship Program (URAP)* at UIUC

Supervised two undergraduate students in developing a distributed garbage collection algorithm for the Akka framework.

2018-2019
External Reviewer

Refereed papers for COORDINATION 2018 and JLAMP.

April 2018
Volunteer Instructor at *UIUC CS SAIL* (high school outreach event)

Taught an introduction to network programming with Python.

2015-2017
Member, Vice president, President *of the Undergraduate Theory Group* at U of T

Organized events and seminars for faculty and researchers, directed towards undergraduates.