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Kaari-Landry
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Kaari Landry

'Every great advance in science has issued from a new audacity of imagination.' - John Dewey

Profile

personal motivation: I am lucky to find myself in the field of bioinformatics. This field combines my passion for the natural world with my joy in solving algorithmic puzzles.

career objective: I hope to pursue a career that will engage my interest in research, both of theory and practical applications, as well as my skills in teaching and science communication.

Education

2020–present **Ph.D. Science**, *University of Manitoba*, Winnipeg MB, GPA *4.5/4.5*
Advisor Dr. Olivier Tremblay-Savard in the Bioinformatics Lab. Thesis-based stream with research in algorithms in phylogenetics.

2019–2020 **M.Sc.**, *University of Manitoba*, Winnipeg MB, GPA *4.5/4.5*
No degree awarded. Originally started a Masters program, advisor Dr. Olivier Tremblay-Savard. Transferred to a Ph.D. program.

2016–2019 **B.C.S., Honours**, *Dalhousie University*, Halifax NS, GPA *3.44/4.3*
Degree with honours thesis completed under the supervision of Dr. Norbert Zeh. Also attended humanities and science (biology) classes here before enrollment.

2012–2016 **B.F.A., Studio**, *NSCAD University*, Halifax NS, GPA *3.68/4.3*
Interdisciplinary studio major with experience in foundry, animation, and printing. Self-directed work focused on mixed-media and life drawing and painting.

2008–2010 **Fine Arts and Education**, *University of Lethbridge*, Lethbridge AB, GPA *3.37/4.0*
No degree awarded. Pursued B.Ed./B.F.A. combined degree programme with minor in French education including linguistics.

Research

topic introduction: Phylogenetics is the study of evolutionary relationships, typically modelled by a tree graph. Gene sequencing data suggest, in some cases, phylogenetic relationships are best resolved with a more complex network model. Computation on networks is inherently inefficient. My research has been on this topic; specifically network models in phylogenetics and efficient algorithms on them.

Ph.D. thesis (in progress)

title: *Efficient Algorithms on Phylogenetic Networks*

supervisor: Dr. Olivier Tremblay-Savard

description We define a new network distance based on a network trimming operation. It is, as expected, inefficient when naively computed. We have designed an algorithm to run with a much smaller (than the input size) exponential parameter that reflects the network complexity. The algorithm is being implemented and tested.

Undergraduate honours thesis

title *Reliability of Clustering for Binary Phylogenetic Trees*

supervisor Dr. Norbert Zeh

description It is desirable, for runtime efficiency, to be able to compute on the subnetworks of a network (which we call clustered input). We ask if it is safe to do so, in the sense that the aggregated results computed on subnetworks accurately reflect the result computed on the network as a whole. This thesis focuses on larger sets of binary tree data. Known results for safe clustering are summarised, two new results are proved, and a clustering algorithm is provided.

Publications

[1] Kaari Landry, Olivier Tremblay-Savard, and Manuel Lafond. A fixed-parameter tractable algorithm for finding agreement cherry-reduced subnetworks in level-1 orchard networks. *Journal of Computational Biology*, pages 360—-379, 2023.

[2] Kaari Landry, Olivier Tremblay-Savard, and Manuel Lafond. Finding agreement cherry-reduced subnetworks in level-1 networks. In Katharina Jahn and Tomáš Vinař, editors, *Comparative Genomics*, pages 179–195. Springer Nature Switzerland, 2023.

[3] Kaari Landry, Aivee Teodocio, Manuel Lafond, and Olivier Tremblay-Savard. Defining phylogenetic network distances using cherry operations. *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, pages 1654–1666, 2022.

[4] Kaari Landry, Aivee Teodocio, Manuel Lafond, and Olivier Tremblay-Savard. Novel phylogenetic network distances based on cherry picking. In *International Conference on Algorithms for Computational Biology*, pages 57–81. Springer, 2021.

Awards and Fellowships

2021-2022 **Mark and Sharon Evans Grad Fellowship in Computer Science**, *Dr. Mark and Mrs. Sharon Evans*, University of Manitoba

Annual award based on academic achievement, amount varies $1,875 - $2,850, to students in good academic standing and who have demonstrated research potential.

Winter 2021 **Research Completion Scholarship**, *Faculty of Graduate Studies*, University of Manitoba

Awarded to those who are in good academic standing and who have defended their thesis proposal, in the amount of $5000.

2020-present **Fellowship for Education Purposes**, *Computer Science Department and Faculty of Graduate Studies*, University of Manitoba

Benefit given for the purpose of advancing one's education, Ph.D. program amount of $21,000 awarded annually.

2019-2020 **Fellowship for Education Purposes**, *Computer Science Department and Faculty of Graduate Studies*, University of Manitoba

Benefit given for the purpose of advancing one's education, Master's program amount of $19,000 awarded annually.

2014 **Alicia Little Memorial Bursary**, *Blue Ocean Contact Centers (Employer)*, Halifax NS

A competitive bursary in the amount of $1000, awarded to the winner of an essay contest.

Conferences

presented

Spring 2023 **Research in Computational Molecular Biology - Comparative Genomics**, *RECOMB-CG/RECOMB*, İstanbul Türkiye

I presented publication [2] at this conference. RECOMB is a conference on the topics of bioinformatics and computational biology, held annually since 1997. CG is a co-located satelite conference on comparative genomics, emphasizing a computational approach and experimentation.

Fall 2021 **7th-8th International Conference on Algorithms for Computational Biology**, *AICoB 2020-2021*, Virtual, Missoula USA

I presented publication [4] at this conference. AICoB aims at promoting and displaying excellent research using string and graph algorithms and combinatorial optimization to deal with problems in biological sequence analysis, genome rearrangement, phylogeny reconstruction, and structure prediction.

Fall 2020 **ComSciConCanWest**, *Harvard University*, Virtual, Western Canada

ComSciCon is the communicating science workshop for graduate students. Competitive entry was gained with my submission *Living Hybrids: The Hybridization of Heliconius Butterflies in Central America*, written and illustrated for a general audience.

attended

Spring 2023 **Canadian Symposium on Academic Integrity**, *CSAI*, Winnipeg Canada

Attendee of 3rd biannual meeting of Canada's leading conference on academic integrity in post-secondary education.

Experience

Teaching Assistant and Marking

2019–present **TA and Marker**, *Dalhousie University and University of Manitoba*

Teaching Assistant duties include planning and leading lab sessions, holding office hours, marking labs, and monitoring class forum and live chat. Marking duties include marking assignments, exams, and invigilating.

Undergraduate Courses:

Dalhousie University 2019		*University of Manitoba* 2020-2023	
1110	Intro to CS	1010	Intro to CS
		1020	Intro to CS 2
2110	Data Structures and Algorithms	2140	Data Structures and Algorithms
3136	Principles of Programming Languages	3030	Automata Theory and Formal Languages
		4820	Bioinformatics

2019–2023 **Assistant**, *Dalhousie Computer Science Resource Centre, Halifax NS and University of Manitoba Computer Science Help Centre, Winnipeg MB*

Provided homework and study help one-on-one and in small groups for all undergraduate computer science courses.

Certification

2019-2022 **Certificate of Completion**, *SEDA (Staff and Educational Development Association)*, Winnipeg MB

Level 1: Novice Graduate Teaching Program offered by The Centre for the Advancement of Teaching and Learning at University of Manitoba, accredited by SEDA, a UK-based professional associated whose mission is the enhancement of higher education. Program focussed on principles of andragogy in both a historical and modern framework. Heavy emphasis placed on written personal reflections.

Other Teaching and Tutoring

2012–2015 **Private Tutor**, Halifax NS

One-on-one ESL writing and reading specialty.

2010 **Classroom Assistant**, Lethbridge AB

University of Lethbridge Faculty of Education entrance placement at Galbraith Elementary. Responsible for assisting in classroom management, as well as designing and delivering unique lesson plans in literature, art, mathematics, and physical education.

Additional Activities

Other Certification

Winter 2017 **Certificate of Participation**, *Mental Health Commission of Canada*, Halifax NS

Mental Health First Aid for Adults who Interact with Youth. This multi-day course offers preparation to confidently interact with youth (aged 14-25) about mental health. Topics included mental health and stigma, recognizing signs and symptoms, and how to provide effective intervention.

Volunteer

2019–present **Activist**, *Citizen's Climate Lobby Canada*, Winnipeg Chapter

Non-partisan organization that works on direct relationship building with elected representatives in order to influence climate policy. I have personally met with my own federal representative and the federal and provincial representatives of other chapter members. I have also co-hosted a national educational conference bringing together representatives at federal and provincial levels with the creators of *MIT*'s climate policy modelling software *En-ROADS* (2022). I have also helped with planning, technical work, and execution of a lobbying event that connected provincial MLAs across party lines with a group of non-profits in both environmental activism and in the health sector on the topic of climate effects on health (2023).

2020 **Mentor**, *University of Manitoba Graduate Student's Society*, Winnipeg MB

Matched with and met regularly with a new-to-Canada graduate student to provide support and orientation as the new student adjusts to life in Canada, Winnipeg, and U of M.

2019 **Student Representative**, *Dalhousie University Computer Science Society*, Halifax NS

Provided anonymous, course-specific liaison and advocacy between students and faculty.

2016 **Client Services**, *DSU Food Bank (Feed Nova Scotia Partner)*, Halifax NS

Greeted clients and oversaw product distribution. Also performed basic stocking duties.

2015 **Activist**, *ACORN (Association of Organizations for Reform Now) Canada*, Halifax NS

Community outreach and advocacy on tenants' and renters' rights issues.

2009 **Curator's Assistant**, *Niche Gallery*, Lethbridge AB

Promotion and marketing for a student-run gallery at the University of Lethbridge.

2004-2008 **Member**, *Interact Club (Parent association: Rotary International)*, Lethbridge AB

Participated in regular fundraising initiatives at the local and international levels.

Gallery Shows

Fall 2015 **Advanced Studio in Drawing Showcase**, *Port Loggia Gallery*, Halifax NS

Winter 2014 **Halifax Harvest: Grazing Around Town**, *Anna Leonowens Gallery*, Halifax NS
Also served on planning and promotion committee, performed in-situ setup as person in charge of safety.

Spring 2008 **International Baccalaureate Student Graduation Show**, *Lethbridge School District Number 51*, Lethbridge AB
Graduation show for I.B. programme, Visual Arts subject taken a standard level, grade 5/7 awarded.

Spring 2005 **Art's Alive and Well in the Schools**, *Southern Alberta Art Gallery (SAAG)*, Lethbridge AB
Selection-based competitive entry.

Languages

English Native Speaker

French Fluent

ASL Basic

Certification

Summer 2008 **Certificate of Completion**, *Explore French Immersion Program*, Rivière-du-Loup QC
Completed an intensive 5 week French language immersion program.