Logan Born
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Education

Doctor of Philosophy (Computing Science)   Ongoing
Simon Fraser University, Burnaby, BC, Canada
Cumulative GPA: 4.33 (4.33 point scale)
Senior Supervisor: Anoop Sarkar

Master of Science, Computing Science   2018
Simon Fraser University, Burnaby, BC, Canada
Cumulative GPA: 4.2 (4.33 point scale)
Senior Supervisor: Anoop Sarkar
Thesis title: *Properties of Prefix Lexicalized Synchronous Grammars*

Bachelor of Science, Computer Science, Minor in Linguistics   2016
University of Calgary, Calgary, AB, Canada
Cumulative GPA: 3.985 (4 point scale)

Teaching and Research Interests

- I am interested in interdisciplinary work which applies tools from natural language processing to the analysis and visualization of text from other disciplines, with a focus on low-resource archaeological decipherment problems.

- Secondary interests include formal language theory and natural language syntax.

Publications

Kambhatla, Nishant, **Logan Born** and Anoop Sarkar. 2022. Auxiliary subword segmentations as related languages for low resource multilingual translation. In *Proceedings of the 23rd Annual Conference of the European Association for Machine Translation (EAMT) 2022*. Ghent, Belgium. https://aclanthology.org/2022.eamt-1.16

Kambhatla, Nishant, **Logan Born** and Anoop Sarkar. 2022. CipherDAug: Ciphertext based data augmentation for neural machine translation. In *Proceedings of the 60th Annual Meeting of the Association for Computational Linguistics (Volume 1: Long Papers), ACL 2022*. Dublin, Ireland. https://aclanthology.org/2022.acl-long.17

Born, **Logan**, Kathryn Kelley, M. Willis Monroe, and Anoop Sarkar. 2021. Compositionality of Complex Graphemes in the Undeciphered Proto-Elamite Script using Image and Text Embedding Models. In *Findings of the Association for Computational Linguistics: ACL/IJCNLP 2021*. Online event. DOI: https://doi.org/10.18653/v1/2021.findings-acl.362

Born, Logan and Kathryn Kelley. 2021. A Quantitative Analysis of Proto-Cuneiform Sign Use in Archaic Tribute. *Cuneiform Digital Library Bulletin* 2021:6. https://cdli.ucla.edu/file/publications/cdlb2021_006.pdf

Born, Logan, Kate Kelley, Nishant Kambhatla, Carolyn Chen, and Anoop Sarkar. 2019. Sign clustering and topic extraction in proto-Elamite. In *Proceedings of the Third Joint SIGHUM Workshop on Computational Linguistics for Cultural Heritage, Social Sciences, Humanities and Literature (LaTeCH-ClfL-2019).* Minneapolis, Minnesota, USA. DOI: http://doi.org/10.18653/v1/W19-2516

Han, Chung-hye, Sara Williamson, **Logan Born**, and Anoop Sarkar. 2019. An analysis of clausal coordination using synchronous tree adjoining grammar. In *Journal of Logic and Computation* 29(1):91–123. DOI: https://doi.org/10.1093/logcom/exy031

Born, Logan. 2018. *Properties of Prefix Lexicalized Synchronous Grammars.* M.Sc. Thesis, Simon Fraser University. https://summit.sfu.ca/system/files/iritems1/19060/etd10760.pdf

Born, Logan and Anoop Sarkar. 2018. Prefix lexicalization of synchronous CFGs using synchronous TAG. In *Proceedings of the 56th Annual Meeting of the Association for Computational Linguistics* 1:1160–1170. Melbourne, Australia. DOI: http://dx.doi.org/10.18653/v1/P18-1107

Other Presentations

Born, Logan, Kathryn Kelley, M. Willis Monroe, and Anoop Sarkar. 2021. Compositionality of Complex Graphemes in the Undeciphered Proto-Elamite Script using Image and Text Embedding Models. Poster presented at the 6th Workshop on Representation Learning for NLP (Repl4NLP). Online.

Born, Logan. 2019. IT Solutions for Collections Management. Invited lecture for ARKY 349 (Management of Archaeological Collections). Simon Fraser University, Vancouver, Canada.

Wang, Chenhao, Philip Cho, **Logan Born**, Zhuo Cen, Yijing Xue. 2019. Taxi Demand Prediction for Regions with Sparse Demand. Poster presented at the 1st BC AI Student Showcase. Vancouver, Canada.

Born, Logan and Anoop Sarkar. 2018. A weight-preserving lexicalization for weighted synchronous context-free grammars. 9th International Workshop on Weighted Automata: Theory and Applications (WATA 2018). Leipzig, Germany.

Han, Chung-hye and Anoop Sarkar. 2017. Coordination in TAG without the Conjoin Operation. 13th International Workshop on Tree-Adjoining Grammar and Related Formalisms. Umeå, Sweden. **Presented on behalf of Anoop Sarkar.**

Selected Research Experience

Data Exploration for Undeciphered Ancient Near Eastern Scripts   Ongoing
With an interdisciplinary team of archaeologists and computer scientists, performed the first-ever large-scale computational analysis of the undeciphered proto-Elamite script, which independently replicated and expanded on results from historic manual analyses.

Writing Well is Hard   2022
Collaborated with academics and professionals in the editing industry to develop a suite of visualizations that facilitate the editing of academic writing (www.writingwellishard.com).

Google Summer of Code 2020   2020
Interned with the Cuneiform Digital Library Initiative to develop tools for processing numeric notations in ancient scripts, and created novel exploratory visualizations for ancient accounting corpora.

Simon Fraser University Tree-Adjoining Grammars Reading Group   2016 – 2017
As part of an interdisciplinary linguistics/computer science reading group, helped develop a novel approach to sentence coordination which is less computationally complex than prior approaches.

Topics in Quantum Computing   2015
As part of a research-focussed course in quantum computing, proved novel bounds on the error-tolerance of amplitude amplification and related search-based quantum algorithms.

Formal Properties of Tree Tuple Multi-Component Tree Adjoining Grammars   2015
Investigated whether all tree-tuple multicomponent tree adjoining languages are semilinear, and searched for normal forms and pumping algorithms for this class of languages.

Undergraduate Research Projects   2012 – 2016
At an undergraduate level, I investigated the syntax of split constituents in Old English; historical phonology with an emphasis on Proto-Germanic prosody (tonal accents, syllable cut, and stød); syntactic and semantic changes in the development of Proto-Anatolian out of Proto-Indo-Hittite; and the historiography of markedness and well-formedness in linguistics.

Teaching Experience

Teaching Assistant, Simon Fraser University

CMPT 379 – Principles of Compiler Design	Fall 2021
CMPT 353 – Computational Data Science	Fall 2019
CMPT 225 – Data Structures and Programming	Fall 2019
CMPT 127 – Computing Laboratory	Summer 2018
CMPT 120 – Introduction to Computing Science and Programming I	Fall 2017
CMPT 225 – Data Structures and Programming	Fall 2017
CMPT 383 – Comparative Programming Languages	Summer 2017

Research Grants

NSERC Canada Graduate Scholarship-Doctoral (CGS-D)   2020 – 2023
Awarded by the National Science and Engineering Research Council of Canada (NSERC)
NSERC Canada Graduate Scholarship-Master's (CGS-M)   2016
Awarded by the National Science and Engineering Research Council of Canada (NSERC)
NSERC Undergraduate Student Research Award (USRA)   2015
Awarded by the National Science and Engineering Research Council of Canada (NSERC)

Honours and Awards

SFU CMPT Graduate Fellowship	2016, 2020, 2021
SFU Computing Science Travel Award	2018
Don S. Bidulock Scholarship in Computer Science	2015
University of Calgary Undergraduate Merit Award	2015
Louise McKinney Post-Secondary Scholarship	2013, 2014, 2015
John D. Petrie Memorial Undergraduate Bursary	2014
University of Calgary Senate Bursary	2013
President's Admission Scholarship, University of Calgary	2012
Margaret and Ted Newall Bursary	2012
Alexander Rutherford Scholarship	2012
Governor General's Academic Medal (Bronze)	2012

Volunteer Experience

Simon Fraser Museum of Archaeology and Ethnology

Research Associate	2019 – 2020
Archive Digitization and Cataloging	2017 – 2018

Scribe and Muse English Club

Peer Revising (reviewing and editing assistance)	2015 – 2016

Language Competence

English (native), French (read, write, speak), Japanese (basic reading and writing)