

Jonathan Rawski

Curriculum Vitae

Department of Linguistics & Language Development
San Jose State University San Jose, CA
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Employment & Affiliations

- 2021-present Assistant Professor
Dept. of Linguistics & Language Development
San Jose State University
- 2018-2021 Graduate Assistant
Stony Brook Computational Linguistics Lab
Jeffrey Heinz, Thomas Graf, SBU TALENT Grant & NIH grant #R01HD87133-01
Research Activities, Developed Interactive, Open Source Learning Platform for Mathematical Linguistics
- 2017-2021 Graduate Student Member
Institute for Advanced Computational Science, Stony Brook University
- 2019-2020 Graduate Assistant
Department of Neurobiology and Behavior, Stony Brook University
Developing Center for Neural Circuit Dynamics, grant writing for \$4.5m NIH BRAIN Initiative Grant "Metastable dynamics in cortical circuits"
- 2015-2016 Graduate Assistant
Theoretical Neuroscience Group, Higher School of Economics, Moscow
- 2015 Research Assistant
Neurolinguistics Laboratory, Higher School of Economics, Moscow
- 2013 Undergraduate Researcher
Department of Speech-Language-Hearing Sciences, University of Minnesota
- 2012-2013 Student Manager, Undergraduate Research Assistant
NuMI Off-Axis Electron Neutrino Appearance (NOvA) Laboratory
Department of Physics, University of Minnesota

Research Areas

- Linguistics Computational/Mathematical Linguistics, Learnability, Phonology, Morphology
- Computer Algorithmic Learning Theory, Automata Theory, Formal Languages, Tensor Analysis,
Science Machine learning

Education

- 2016–2021 **PhD, Linguistics.**
Stony Brook University
Dissertation: Structure and Learning in Natural Language
Advisor: Jeffrey Heinz

- 2014– 2016 **MSc, Cognitive Science.**
 Higher School of Economics - Moscow
 Thesis: Homeostasis in Harmonic Grammar
 Advisors: Boris Gutkin (HSE/Ecole Normale) and Paul Smolensky (Johns Hopkins)
- 2010– 2013 **BA, Linguistics.**
 University of Minnesota - Twin Cities
- Non Degree-Conferring**
- 2019 LSA Linguistic Institute
 2017 Crete Summer School of Linguistics
 2016 Visiting Graduate Student, Neural Theory Group, École Normale Supérieure, Paris
 2015, 2016 New York-St. Petersburg Institute for Linguistics, Cognition, and Culture (NYI)
 2016 Winter Mathematics School, Higher School of Economics, Moscow

Courses Taught

Primary Instructor

- San Jose Introduction to Linguistics - Fall 2021
 State Speech Technology - Fall 2021
- Stony Brook IACS Summer Youth Camp for Computational Linguistics - Summer 2020
 Human Language - Summer 2017
 Writing in Linguistics - Winter 2017, 2018
 Advanced English Academic Writing - Spring 2017
- TWMS ESL Teacher, Head of English - 2013-2014
 Hong Kong

Teaching Assistant

- Stony Brook Computational Linguistics - Spring 2021
 Language and Technology - Fall 2018, 2020
 Language Acquisition - Spring 2018
 Human Language - Fall 2016
- HSE Intro to Cognitive Science - 2015 – 2016
- LSA Institute Computational Phonology - Summer 2019
- CreteLing Introduction to Phonology - Summer 2017
 Summer
 School

Grants and Awards

- 2021 President's Award to Distinguished Doctoral Students, Stony Brook University
- 2018 – 2020 IACS Junior Researcher Fellowship
- 2018 IACS Travel Award
- 2017 Crete Summer School of Linguistics Fellowship (tuition, lodging)
- 2014 - 2016 Higher School of Economics Graduate Fellowship (tuition, lodging, stipend)

- 2014 - 2016 Russian Federation Graduate Scholarship
- 2012 - 2013 University of Minnesota UROP Grant (Co-PI with Peter Watson). "The Influence of Positive Correction on Phonological Learning"
- 2011 - 2013 North Central Electric League Scholarship
- 2010 - 2013 Tyler Hill Memorial Scholarship

Publications and Manuscripts

Note: author ordering is often alphabetical

Journal Articles

- in prep* **Rawski, Jonathan.** *Computational Locality in Signed Phonology*
- in revision* Dolatian, Hossep and **Jonathan Rawski.** *Computational Locality in Nonlinear Morpho-phonology*
- to appear* Lambert, Dakotah, **Jonathan Rawski,** and Jeffrey Heinz. *Typology Emerges from Simplicity in Representations and Learning.* Journal of Language Modeling.
- 2021, July **Rawski, Jonathan,** William Idsardi, and Jeffrey Heinz. *Comment on "Nonadjacent Dependency Processing in Monkeys, Apes, and Humans".* Science Advances
- 2021, Jun Aronoff, Mark, **Jonathan Rawski,** and Wendy Sandler. *Talk Isn't So Cheap.* Inference.
- 2020, Feb De Santo, Aniello and **Jonathan Rawski.** *What Can Formal Language Theory Do for Animal Cognition Studies?* Royal Society Open Science
- 2019, Mar **Rawski, Jonathan** and Jeffrey Heinz. *No Free Lunch in Linguistics or Machine Learning: Reply to Pater.* Language, 95(1)

Paper-reviewed Conference Proceedings

- 2021, Jan Dolatian, Hossep, Jeffrey Heinz, and **Jonathan Rawski.** *Strong Generative Capacity of Morphological Processes.* Proceedings of the Society for Computation in Linguistics, volume 4. Association for Computational Linguistics.
- 2020, Jan Nelson, Max, H. Dolatian, **J. Rawski,** B. Prickett. *Probing RNN Encoder-Decoder Generalization of Subregular Functions using Reduplication.* Proceedings of the Society for Computation in Linguistics, volume 3. Association for Computational Linguistics
- 2020, Jan Dolatian, Hossep and **Jonathan Rawski.** *Multi-Input Strictly Local Functions for Templatic Morphology.* Proceedings of the Society for Computation in Linguistics, volume 3. Association for Computational Linguistics
- 2020, Jan **Rawski, Jonathan** and Hossep Dolatian. *Multi-Input Strictly Local Functions for Tonal Phonology.* Proceedings of the Society for Computation in Linguistics, volume 3. Association for Computational Linguistics
- 2019, Aug **Rawski, Jonathan.** *Tensor Product Representations of Subregular Formal Languages.* Proceedings of the International Joint Conference on Artificial Intelligence (IJCAI) workshop on Neural-Symbolic Learning and Reasoning

- 2019, Jul Chandlee, Jane, R. Eyraud, J. Heinz, A. Jardine, **J. Rawski**. *Learning with Partially Ordered Representations*. In Proceedings of the 16th Meeting of on the Mathematics of Language (SIGMOL 2019), Association for Computational Linguistics (ACL).
- [Abstract-reviewed Conference Proceedings](#)
- 2021, Jan Koser, Nate, Hossep Dolatian, **Jonathan Rawski**, and Kristina Strother-Garcia. *Computational Restrictions on Iterative Prosodic Processes*. Proceedings of the Annual Meeting on Phonology.
- 2019, Sep Dolatian, Hossep, **Jonathan Rawski**. *Finite-State Locality in Semitic Root-and-Pattern Morphology*. Proceedings of the 43rd Penn Linguistics Conference
- 2019, Jan Chandlee, Jane, R. Eyraud, J. Heinz, A. Jardine, **J. Rawski**. *How the Structure of the Constraint Space Enables Learning*. Proceedings of the Society for Computation in Linguistics. Association for Computational Linguistics
- 2018, May De Santo, A., **J. Rawski**, and J.E. Drury. *Quantified Sentences as a Window Into Prediction and Priming: An ERP Study*. Proceedings of the 54th Meeting of the Chicago Linguistics Society
- 2018, Jan **Rawski, Jonathan**. *Subregular Complexity Across Speech and Sign*. Proceedings of the Society for Computation in Linguistics
- 2017, Jul **Rawski, Jonathan**. *Phonological Complexity Across Speech and Sign*. Proceedings of the 53rd Meeting of the Chicago Linguistics Society

[Peer-Reviewed Invited Book Chapters](#)

- in prep* **Rawski, Jonathan**. *First-Order Definable Sign Language Mappings*. in J. Heinz (ed.), *Doing Computational Phonology*.
- to appear* De Santo, Aniello and **Jonathan Rawski**. *Mathematical Linguistics and Cognitive Complexity*. in Danesi, Marco (ed.), *The Springer Handbook of Cognitive Mathematics*.
- to appear* Alena Aksenova, **Jonathan Rawski** Jeffrey Heinz, Thomas Graf. *The Computational Power of Harmony*. in Harry van der Hulst (ed.), *The Oxford Handbook of Vowel Harmony*.
- to appear* Bakovic, Eric, Jeffrey Heinz, and **Jonathan Rawski**. *Phonological abstraction in the mental lexicon*. in Lila R. Gleitman, Anna Papafragou (ed.), *The Oxford Handbook of the Mental Lexicon*.
- to appear* Heinz, Jeffrey and **Jonathan Rawski**. *Learnability*. in B. Elan Dresher and Harry van der Hulst (eds.), *The Oxford Handbook of the History of Phonology*.

--- [Presentations](#)

[Invited Lectures](#)

- 2021, Sep *Typology Emerges from Computability*
NLP Research Group, Monash University
- 2021, Jun *Typology Emerges from Computability*
Association for Computational Linguistics Special Interest Group on Typology (SIGTYP) Lecture Series

- 2020, Feb *Understanding Machine Learning with Language and Tensors*
What Do Formal Languages Tell Us About Cognition?
Phonology and the Chomsky Hierarchy (2 Lectures)
 Concordia University, Montreal
- 2019, Nov *Understanding Machine Learning with Language and Tensors.*
 Dept. of Physics and Astronomy, Stony Brook University
- 2019, May *Subregular Morphology: Structures, Grammar, and Learning.*
 Computational Psycholinguistics Group, Waseda University, Tokyo, Japan
- 2019, May *The Logical Nature of Phonology Across Speech and Sign.*
 Linguistics Department, New York University
- 2019, Mar *How the Structure of the Constraint Space Enables Learning.*
 L'UFR Linguistique, Université Paris 7 Diderot
- 2018, Nov *Learning with Partially Ordered Representations.*
 IACS Seminar Series, Stony Brook University
- 2018, Oct *The Computational Nature of Phonology Across Speech and Sign.*
How the Structure of the Constraint Space Enables Learning.
 Linguistics Department, University of Connecticut
- 2018, Mar *The Logical Complexity of Phonology Across Speech and Sign.*
 Institut Jean Nicod, Ecole Normale Supérieure
- 2016, Nov *Homeostatic Reinforcement Learning for Harmonic Grammars.*
 Linguistics Department, Massachusetts Institute of Technology
- 2016, April *Homeostasis in Harmonic Grammar*
 Laboratoire de Neurosciences Cognitives, Ecole Normale Supérieure
- 2015, Nov *Linguistic Structure from Neural Computation*
 Center for Cognition, Higher School of Economics
- 2013, April *Neuroplasticity and Second-Language Learning*
 Linguistics Colloquium, University of Minnesota

Conference and Workshop Talks

- 2020, Sep **Rawski, Jonathan** and Jeffrey Heinz. *What Does "Simplicity" Mean in Grammar Learning?*. Northeast Computational Phonology Circle.
- 2020, Jan Nelson, Max, H. Dolatian, **J. Rawski**, B. Prickett. *Probing RNN Encoder-Decoder Generalization of Subregular Functions Using Reduplication*. Society for Computation in Linguistics
- 2020, Jan Dolatian, Hossep and **Jonathan Rawski**. *Multi-Input Strictly Local Functions for Templatic Morphology*. Society for Computation in Linguistics
- 2019, Nov **Rawski, Jonathan**. *Tensor Product Representations of Subregular Constraints*. Northeast Computational Phonology Circle, Rutgers University.
- 2019, Aug **Rawski, Jonathan**. *Tensor Product Representations of Subregular Formal Languages*. 14th Neural-Symbolic Learning and Reasoning Workshop at the International Joint Conference on Artificial Intelligence (IJCAI), Macau.

- 2019, July **Rawski, Jonathan**, Aniello de Santo, Thomas Graf, Jeffrey Heinz. *Geometric Representations of Linguistic Structures and Computations*. Annual Meeting of the Society for Mathematical Psychology, Montréal, Canada.
- 2019, July Jane Chandlee, Remí Eyraud, Jeffrey Heinz, Adam Jardine, **Jonathan Rawski**. *Learning with Partially Ordered Representations*. 16th Meeting on the Mathematics of language (SIGMOL 2019). Toronto.
- 2019, June Jane Chandlee, Remí Eyraud, Jeffrey Heinz, Adam Jardine, **Jonathan Rawski**. *Learning with Partially Ordered Representations*. University of Reykjavik, Iceland. Workshop on Learning and Automata (LearnAut) at the ACM/IEEE Symposium on Logic in Computer Science (LICS 2019).
- 2019, May **Rawski, Jonathan**. *Grammars, Structures, and Learning with Sparse Data*. Stony Brook-Tokyo Institute of Technology Joint Meeting. Tokyo.
- 2019, May Jane Chandlee and **Jonathan Rawski**. *Learning with Locality Across Speech and Sign*. Workshop on Rules and Learning Strategies Across Spoken and Signed Language at the 43rd Generative Linguistics in the Old World Conference. Oslo.
- 2019, May Dolatian, Hossep and **Jonathan Rawski**. *The Computational Nature of Templatic Morphology*. 4th American International Morphology Meeting. New York.
- 2019, Apr Dolatian, Hossep and **Jonathan Rawski**. *The Computational Nature of Templatic Morphology*. Phonology in the NorthEast. Yale University
- 2019, Apr Dolatian, Hossep, **Jonathan Rawski**, Sedigheh Moradi. *Computational Implementation of Semitic Template Matching*. Annual Symposium on Arabic Linguistics. Toronto.
- 2019, Mar Dolatian, Hossep, **Jonathan Rawski**, Sedigheh Moradi. *The Computational Nature of Templatic Morphology*. 43rd Penn Linguistics Conference. UPenn, Philadelphia.
- 2018, Nov **Rawski, Jonathan**, Jane Chandlee, Remí Eyraud, Jeffrey Heinz, Adam Jardine. *How the Constraint Space Structure Enables Learning*. NorthEast Computational Phonology Circle. MIT, Boston.
- 2018, July Graf, Thomas, A. Aksenova, A. de Santo, H. Dolatian, **J. Rawski**, S. Yang, J. Heinz. *Tiers and Relativized Locality Across Language Modules*. Parallels Between Phonology and Syntax Workshop. Meertens Institut, Amsterdam.
- 2018, May **Rawski, Jonathan**, Jeffrey Heinz, Adam Jardine, Jane Chandlee. *How the Constraint Space Structure Facilitates Learning*. 10th North American Phonology Conference. Concordia University, Montreal.
- 2018, Apr De Santo, A., **J. Rawski**, and J.E. Drury. *Quantified Sentences as a Window into Prediction and Priming: An ERP Study*. Talk. The 54th Annual Meeting of the Chicago Linguistic Society. University of Chicago.
- 2018, Mar **Rawski, Jonathan**. *Pirates & Publishers*. Conference on The Social Responsibility of Intellectuals, New School for Social Research
- 2017, May **Rawski, Jonathan**. *Phonological Complexity is Subregular: Evidence from Sign Language*. Talk. The 53rd Annual Meeting of the Chicago Linguistic Society. University of Chicago.

- 2016, Dec **Rawski, Jonathan.** *Homeostatic Reinforcement Learning for Harmonic Grammars.* Talk. SYNC Conference, CUNY
- 2013, April **Rawski, Jonathan.** *Neuroplasticity in Second Language Learning.* Talk. Minnesota Undergraduate Linguistics Symposium, St. Olaf University

Conference Posters

- 2020, Sep Koser, Nate, Hossep Dolatian, **Jonathan Rawski**, and Kristina Strother-Garcia. *Computational Restrictions on Iterative Prosodic Processes.* Annual Meeting on Phonology, UC Santa Cruz.
- 2020, Jan **Rawski, Jonathan** and Hossep Dolatian. *Multi-Input Strictly Local Functions for Tonal Phonology.* Proceedings of the Society for Computation in Linguistics, volume 3.
- 2019, Oct Dolatian, Hossep and **Jonathan Rawski.** *Computing Tone: Input Strict Locality over Multiple Inputs.* Annual Meeting on Phonology, Stony Brook University.
- 2019, Jan **Rawski, Jonathan**, Jeffrey Heinz, Adam Jardine, Jane Chandlee. *How the Structure of the Constraint Space Enables Learning.* Poster. Society for Computation in Linguistics Meeting, New York City
- 2018, May **Rawski, Jonathan**, Jeffrey Heinz, Adam Jardine, Jane Chandlee. *Learning Within Linguistically Structured Constraint Spaces.* Joint Science Meeting, Stony Brook University.
- 2018, Jan **Rawski, Jonathan.** *Subregular Complexity Across Speech and Sign.* Poster. Society for Computation in Linguistics Meeting, Salt Lake City
- 2017, Nov De Santo, A., **J. Rawski**, and J.E. Drury. *ERP effects for quantifier complexity, priming, and truth-value in an auditory/visual verification task.* Society for the Neurobiology of Language Annual Meeting, Baltimore.
- 2017, Sept **Rawski, Jonathan**, A. de Santo, and J. Heinz. *Reconciling Minimum Description Length with Grammar-Independent Complexity Measures.* Poster. MIT Workshop on Simplicity in Grammar Learning
- 2015, June **Rawski, Jonathan.** *A Homeostatic Space for Optimality Theoretic Grammars.* Poster. Pronouns: Syntax, Semantics, Processing Conference, Moscow
- 2013, Aug **Rawski, Jonathan.** *The Influence of Feedback On L2 Phonology Learning.* Poster. UROP Summer Symposium, University of Minnesota

Leadership, Service, and Affiliations

Journal Reviews

- 2021 Biology
- 2020 Journal of Linguistics
- 2020 Journal of Language Modeling
- 2019 Phil. Trans. Royal Society B: Biological Sciences
- 2018 Language

Conference Service

- 2020,2021 Program Committee, Conference on Natural Language Learning (CoNLL)

2020 Reviewer, Cognitive Science Society Annual Meeting

Department/University

2018-2020 Student President, Institute for Advanced Computational Science

2018 Organizer, Stony Brook-Yale-NYU-CUNY (SYNC) Conference

2017 - 2018 Organizer, Mathematical Linguistics Reading Group

2017 Organizer, Northeast Computational Phonology Workshop

2017 Organizer, Linguistics Colloquium Series

Community Service

2017-2021 Volunteer, Community Solidarity Association Long Island

Organized food redistribution from local groceries to local homeless shelters and people in need

Professional Memberships

2019-Present Society for Mathematical Psychology

2017-Present Linguistic Society of America

2017-2021 Society for the Neurobiology of Language

Languages

Natural

Native **English**

Advanced **Spanish**

Intermediate **Russian**

Beginner **French**

Formal

ΛT_EX, R, Python, MatLab, Haskell, HTML/CSS

Other Skills

Computational dynamical systems, tree parsing (dependency, minimalist grammars, TAG), finite-state string/tree automata, Bayesian probabilistic inference, neural network modeling,

Experimental EEG, MEG, fMRI, TMS, tDCS
Methods