

NATHAN ROLL

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EDUCATION

Stanford University

Ph.D. in Linguistics

Sept. 2024 - May 2029

University of California, Santa Barbara

B.A. (Hons.) in Economics & Linguistics with distinction

Thesis: *Prosodic Boundary Detection via Lexico-Syntactic Knowledge Transfer*

Data Science Capstone Project: Compression of NLP-Domain Deep Learning Models

Sept. 2020 - Mar. 2023

University of Cambridge

Independent Supervision (first with distinction)

Project: *A Deep Learning Approach to Automatic Prosodic Segmentation*

Advised by Calbert Graham

June 2022 - Aug. 2022

PUBLICATIONS & TALKS

Journal Articles

Feb. 2024: Calbert Graham and Nathan Roll. "Evaluating OpenAI's Whisper ASR: Performance analysis across diverse accents and speaker traits." *JASA Express Letters*, 4.2 (2024).

Peer-Reviewed Proceedings

June 2024: Nathan Roll and Calbert Graham. "Progressive Fine-tuning (for Multilingual Detection of Propaganda Techniques)" In *Proceedings of the 18th International Workshop on Semantic Evaluation*, Mexico City, Mexico. Association for Computational Linguistics.

Dec. 2023: Nathan Roll, Calbert Graham, and Simon Todd. "PSST! Prosodic Speech Segmentation with Transformers." In *Proceedings of the 27th Conference on Computational Natural Language Learning (CoNLL)*, Singapore. ACL.

May 2023: Albert Ventayol-boada, Nathan Roll, and Simon Todd. "Unsupervised part-of-speech induction for language description: Modeling documentation materials in Kolyma Yukaghir." In *Proceedings of the Second Workshop on NLP Applications to Field Linguistics*, Dubrovnik, Croatia. ACL.

Conference Presentations

June 2023: Nathan Roll. "An Integrated Approach to Prosodic Boundary Detection via Lexico-Syntactic Knowledge Transfer." *The Sounds of Communication (Closed URCA Panel)*. Santa Barbara, CA.

May 2023: Nathan Roll. "Nuclear Accent Detection via Integrated ASR frameworks." *UC Davis Symposium on Language Research*. Davis, CA.

SKILLS

Technical:

Linguistics: Praat, ELAN, NLTK, spaCy, gensim, OpenNLP, TextBlob

Programming: Python, R, SQL, Stata, LATEX, HTML, CSS, JavaScript

Machine Learning: PyTorch, TensorFlow, Keras, scikit-learn, statsmodels

Data Science: pandas, NumPy, SciPy, matplotlib, seaborn, ggplot, dplyr

Languages:

Advanced: English (native), Spanish

Reading Proficiency: French, Italian, Portuguese

Other Studies: Tz'utujil (Maya), Mandarin, Yukaghir, Cantonese, Japanese

PROFESSIONAL EXPERIENCE

Strype Analytics

Founder & CEO

Sept. 2023 - Present

Remote

- Optimizing clinical outcomes for at-risk youth using artificial intelligence.
- Contracting with a non-profit organization based in Saskatchewan, Canada.

Nalu.ai (acquired)

Data Scientist

Jan. 2021 - Sept. 2023

Remote

- Designed and implemented machine learning models, data pipelines, and user interfaces for property valuation and management.

Deloitte

Risk & Financial Advisory Intern

Summer 2020

Remote

- Assisted with financial modeling and risk assessment for corporate clients.

Dodge & Cox Funds

Pricing Intern

Summer 2019

San Francisco, CA

- Supported pricing models and investment strategies for large portfolios.

AWARDS & HONORS

June 2023: Top Paper, UC Santa Barbara Dept. of Linguistics

June 2023: Graduation Honors, UC Santa Barbara (GPA in top ~8.5% of undergraduates)

Aug. 2022: Highest Mark (Short Thesis), University of Cambridge

June 2018: Recipient, Rotary Youth Service Award, \$1,000

June 2016: Ambassador, American Youth Leadership Program, China (Approx. \$3,000)

Aug. 2019: Ambassador, Japan Social Innovation Project (\$1,500)

GRANTS & SCHOLARSHIPS

Nov. 2023: Recipient, EMNLP 2023 Volunteer Scholarship, \$525

May 2023: Travel Grant, Davis Symposium on Language Research (declined), \$250

Mar. 2023: Co-recipient, Cambridge Language Sciences Incubator Fund Grant, £3,120 (\$3,837)

Dec. 2022: URCA Grant, University of California, Santa Barbara, \$700