

Ashvini Varatharaj

Education

University of California, Santa Barbara (UCSB)

PHD LINGUISTICS (FOCUS : COMPUTATIONAL LINGUISTICS)

- Advisors: Dr. Simon Todd, Dr. Laurel Brehm

Santa Barbara, CA

2021 - 2026 | GPA: 4.0

Worcester Polytechnic Institute (WPI)

MS COMPUTER SCIENCE

- Advisor: Dr. Neil Heffernan

Worcester, MA

2018 - 2020 | GPA: 4.0

BMS College of Engineering

BACHELOR OF ENGINEERING IN INFORMATION SCIENCE AND ENGINEERING

Bangalore, India

2011 - 2015 | GPA: 9.44/10

Professional Experience

2024 **Teaching Assistant**, UCSB

2022 **Teaching Assistant**, UCSB

2021 -

Present

Research assistant, UCSB

2020 - 2021 **Applied Scientist**, Amazon.com

2019 - 2020 **Graduate Research Assistant**, Assistments Lab, WPI

2019 **Data Science NLP Summer intern**, Fidelity Investments

2018 **Graduate Research Assistant**, Assistments Lab, WPI

2016-2017 **Data Analyst**, Social media based startup

2015-2016 **Software Design Engineer**, Hewlett Packard Software R&D

Publications

JOURNAL AND CONFERENCE PROCEEDINGS

Varatharaj, A., Todd, S. (2024). More than Just Statistical Recurrence: Human and Machine Unsupervised Learning of Māori Word Segmentation across Morphological Processes. In Proceedings of the 21st SIGMORPHON Workshop on Computational Research in Phonetics, Phonology, and Morphology, pp. 20–31.

Varatharaj, A., Read, J., Horton, M., Lochrie, M., Brehm, L. (2024). Children As Evaluators: Understanding Emotion Language Acquisition. Proceedings of the 23rd Annual ACM Interaction Design and Children Conference. 2024.

Varatharaj, A., Welch, A., Bucholtz, M., Lee, J. S. (2024). Teaching Linguistic Justice through Augmented Reality. AR for Social Justice Workshop, Conference on Human Factors in Computing Systems (CHI) 2024

Varatharaj, A., Botelho, A. F., Lu, X., Heffernan, N. T. (2020, July). Supporting Teacher Assessment in Chinese Language Learning Using Textual and Tonal Features. In International Conference on Artificial Intelligence in Education (pp. 562-573). Springer, Cham.

Varatharaj, A., Botelho, A. F., Lu, X., Heffernan, N. T. (2019, January). Hao Fayin: Developing Automated Audio Assessment Tools for a Chinese Language Course. In Proceedings of The Twelfth International Conference on Educational Data Mining.

Botelho, A. F., **Varatharaj, A.**, Patikorn, T., Doherty, D., Adjei, S. A., Beck, J. E. (2019). Developing early detectors of student attrition and wheel spinning using deep learning. IEEE Transactions on Learning Technologies, 12(2), 158-170.

Botelho, A. F., **Varatharaj, A.**, Inwegen, E. G. V., Heffernan, N. T. (2019, March). Refusing to Try: Characterizing Early Stopout on Student Assignments. In Proceedings of the 9th International Conference on Learning Analytics and Knowledge (pp.

391-400).

Closser, A. H., Erickson, J. A., Smith, H., **Varatharaj, A.**, Botelho, A. F. (2021). Blending learning analytics and embodied design to model students' comprehension of measurement using their actions, speech, and gestures. *International Journal of Child-Computer Interaction*, 100391.

Erickson, J. A., Botelho, A. F., McAteer, S., **Varatharaj, A.**, Heffernan, N. T. (2020, March). The automated grading of student open responses in mathematics. In *Proceedings of the Tenth International Conference on Learning Analytics and Knowledge* (pp. 615-624).

BOOK CHAPTER

Varatharaj, Ashvini, Gregory Scontras, and Naomi Nagy. 2024. A multi-generational analysis of heritage language complexity. In M. Polinsky and M. T. Putnam (eds.), *Formal approaches to complexity in heritage languages*, 133-152.

CONFERENCE TALKS

Varatharaj, A., Brehm, L.(2024). Investigating Child-Parent Emotional Discourse and Emotion Recognition Through Interactive Experiments. Full conference talk at the International Society for Research on Emotion (ISRE) Conference.

Varatharaj, A., Brehm, L.(2024). Emotion Language Acquisition in Children: An Exploratory Case Study on the Word "Good". Poster presented at the 6th California Meeting on Psycholinguistics (CAMP6).

Varatharaj, A., Brehm, L.(2023). How do we learn to talk about our emotions?. Poster presented at the 14th California Cognitive Science Conference (CCSC).

Varatharaj, A., Brehm, L.(2023). How do we learn to talk about our emotions?. Gave a talk at the 26th Conference on Language, Interaction, and Social Organization (LISO).

Varatharaj, A., Scontras, G., and Nagy, N. (2021). On the role of language dyads in heritage language complexity: An information-theoretic analysis. Poster presented at the 13th Heritage Language Research Institute.

Varatharaj, A., Scontras, G., and Nagy, N. (2021). Heritage language complexity in flux: An information-theoretic analysis. *International Symposium on Bilingualism (ISB13)*

Varatharaj, A., Scontras, G., and Nagy, N. (2021). A multi-generational analysis of heritage language complexity. Talk at CRA-WP (Computing Research Association Widening Participation)

Associated Research Labs and Experience _____

Child Computer Interaction Lab (ChiCI)

University of Central Lancashire

ADVISOR: DR. JANET READ, DR.MATTHEW HORTON, DR MARK LOCHRIE

2023-Present

- Collaborated to work on cross-cultural differences in the "Children as evaluators" project.

Computational Psycholinguistics For Listening And Speaking (CPLS)

UC Santa Barbara

ADVISOR: DR. SIMON TODD

2021-Present

- MA thesis: Exploring the Extent of Statistical Learning used by Implicit Language Learners in Māori

Producing and Perceiving Language (PRPL) lab

UC Santa Barbara

ADVISOR: DR. LAUREL BREHM

2022-Present

- Qualifying Project: Interviewed children and parents at the MOXI museum to collect data on emotion labeling tasks.

The Meaning Lab

UC Irvine

ADVISOR: DR. GREGORY SCONTRAS

2020-2022

- Project: Analyzing language change in heritage languages using information theoretic metrics. Currently extending that work into social media data.

Heritage Language Variation and Change Project

University of Toronto

ADVISOR: DR. NAOMI NAGY

2020-2021

- Projects: Worked on heritage language complexity project in collaboration with Dr.Scontras.

ASSISTments lab

ADVISOR: DR. NEIL HEFFERNAN

WPI
2018-2020

- MS Thesis: Automated grading model for Chinese language assignments using machine learning.
- Projects : Worked on building models related to understanding student behaviors in online learning platforms.

Educational Psychology and Mathematics Learning Lab

ADVISOR: DR. ERIN OTTMAR

WPI
2018-2020

- Projects : Worked on understanding multimodal student comprehension project with the Learning Sciences department.

Awards, Fellowships, & Grants

- 2022 **Mental Health Mini-grant**, University of California, Santa Barbara
- 2021 **Regents Fellowship (5 years of funding)**, University of California, Santa Barbara
- 2020 **Graduate Research and Innovation Exchange Finalist (GRIE)**, WPI

IBM Research Challenge, winning team, TechTogether Hackathon

- 2019 **JP Morgan Financial Hack, winning team**, SheHacks Boston Hackathon

Teaching Experience

- Fall 2024 **Programming for Linguists**, Teaching Assistant
- Winter 2024 **SKILLS (School Kids Investigating Language, Life and Society)**, Instructor of Record
- Spring 2023 **Language in Life**, Teaching Assistant
- Winter 2023 **Introduction to First Language Acquisition**, Teaching Assistant
- Fall 2022 **Programming for Linguists**, Teaching Assistant
- April 2020 **Guest Lecturer**, Becker College
- Spring 2018 **Operating Systems**, Teaching Assistant
- Spring 2018 **Systems Programming**, Teaching Assistant
- Summer 2018 **Web programming**, Teaching Assistant

Outreach & Professional Development

SERVICE AND OUTREACH

- 2024 - **Responsible Tech University Network Board of Director** , All Tech is Human *Santa Barbara, CA*
- Present **Speaker for Women in STEM series**, Girls Inc. of Carpinteria *Santa Barbara, CA*
- Fall 2020 **Instructor (Python)**, Talent Quest for India *Virtual*
- Spring 2020 **Volunteer**, Girls who code club at WPI *Worcester, MA*
- Fall 2019 **Mentor**, Women in Research and Mentorship Program, Pre-collegiate Outreach Program *Worcester, MA*
- Spring 2020 **Tutor for after school program**, YMCA *Worcester, MA*
- 2017 **English tutor**, U&I (a non-profit organization) *India*

PEER REVIEWER

- International Conference on Artificial Intelligence in Education
- Conference on Human Factors in Computing Systems (CHI)

Languages and Technical skills

LANGUAGES

English, Tamil, Hindi, Kannada

PROGRAMMING

Python, C, C#, C++, Java, Javascript, MySQL, HTML, CSS, Scala

FRAMEWORKS AND TOOLS

PyTorch, Tensorflow, Keras, Jupyter, Amazon Web Services, Android Studio, Spark, scikit-learn, Praat, PyAudioAnalysis