Ashvini Varatharaj

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Education

University of California, Santa Barbara (UCSB) *Santa Barbara, CA*
PHD LINGUISTICS (FOCUS : COMPUATIONAL LINGUISTICS) *2021 - 2026 | GPA: 4.0*
• Advisors: Dr. Simon Todd, Dr.Laurel Brehm

Worcester Polytechnic Institute (WPI) *Worcester, MA*
MS COMPUTER SCIENCE (FOCUS: EDUCATION TECHNOLOGY) *2018 - 2020 | GPA : 4.0*
• Advisor: Dr. Neil Heffernan

BMS College of Engineering *Bangalore, India*
BACHELOR OF ENGINEERING IN INFORMATION SCIENCE AND ENGINEERING *2011 - 2015 | GPA : 9.44/10*

Professional Experience

2025 Summer	**LLM Software development Intern**, Worldviz.com
2024- Present	**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, CONFERENCE PROCEEDINGS AND WORKSHOP PAPERS

Varatharaj, A., Todd, S., Brehm, L. (2025). Children's emotion vocabulary learning discloses a growing understanding of specific concepts. Poster accepted at the Annual Meeting of the Cognitive Science Society (CogSci) 2025.

Varatharaj, A., Brehm, L., Read, J., Horton, M. (2025). Child-Centered Emotional Alignment in Chatbots: Building Trustworthy AI Interactions. C3AI, Child-centered Interaction and Trust in Conversational AI Workshop, Interaction Design and Children (IDC) 2025.

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.
- Collaborated to work on child-centered emotion alignment study in chatbots.

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.

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   *WPI*
ADVISOR: DR. NEIL HEFFERNAN   *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   *WPI*
ADVISOR: DR. ERIN OTTMAR   *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

Spring 2025	**LING 137 Introduction to First Language Acquisition**, Teaching Assistant	*UCSB*
Winter 2025	**LING 127 Psychology of Language, UCSB**, Teaching Assistant	*UCSB*
Fall 2024	**LING 102 Programming for Linguists, UCSB**, Teaching Assistant	*UCSB*
Winter 2024	**SKILLS (School Kids Investigating Language, Life and Society)**, Instructor of Record	*San Marcos High School*
Spring 2023	**LING 15 Language in Life**, Teaching Assistant	*UCSB*
Winter 2023	**LING 137 Introduction to First Language Acquisition**, Teaching Assistant	*UCSB*
Fall 2022	**LING 102 Programming for Linguists**, Teaching Assistant	*UCSB*
April 2020	**Guest Lecturer**, Becker College	*Worcester, MA*
Spring 2018	**Operating Systems**, Teaching Assistant	*WPI*
Spring 2018	**Systems Programming**, Teaching Assistant	*WPI*
Summer 2018	**Web programming**, Teaching Assistant	*WPI*

Outreach & Professional Development   SERVICE AND OUTREACH

2024 - Present	**Responsible Tech University Network Board of Director** , All Tech is Human	*Santa Barbara, CA*
Spring 2022	**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