Parker Carlson

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EDUCATION

University of California, Santa Barbara, Santa Barbara, CA
Ph.D. in Computer Science (GPA: 4.00) — Sep 2023 – Jun 2028

Oregon State University, Corvallis, OR
B.S. in Computer Science (GPA: 3.98; *summa cum laude*) — Sep 2019 – Jun 2023

PROFESSIONAL EXPERIENCE

Apple Inc., Cupertino, CA
Machine Learning Engineer Intern — Jun 2025 – Sep 2025

University of California, Santa Barbara, Santa Barbara, CA
Research Assistant — Sep 2023 – Jun 2025
Teaching Assistant — Aug 2024 – Jun 2025

Micro Systems Engineering Inc., Portland, OR
Data Science Intern — Jun 2022 – Dec 2022

Viewpoint, a Trimble Company, Portland, OR
Data Science Intern — Jun 2021 – Sep 2021

Oregon State University, Corvallis, OR
Academic Learning Assistant — Sep 2020 – Jun 2022
Research Assistant — Jun 2020 – Sep 2020

CONFERENCE PUBLICATIONS

1. **Carlson, P.**, Xie, W., He, S., and Yang, T. Dynamic superblock pruning for fast learned sparse retrieval. In *Proceedings of the 48th International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR '25)*, 2025. AR=28%
2. He, S., Xie, W., Qiao, Y., **Carlson, P.**, and Yang, T. Low-cost document retrieval with dense pseudo-query encoding. In *Proceedings of the 48th International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR '25)*, 2025. AR=28%
3. Yang, Y., **Carlson, P.**, Qiao, Y., Xie, W., He, S., and Yang, T. Lstm-based selective dense text retrieval guided by sparse lexical retrieval. In *The 47th European Conference on Information Retrieval (ECIR '25)*, 2025. AR=23%
4. Qiao, Y., **Carlson, P.**, He, S., Yang, Y., and Yang, T. Threshold-driven pruning with segmented maximum term weights for approximate cluster-based sparse retrieval. In *The 2024 Conference on Empirical Methods in Natural Language Processing (EMNLP '24)*, 2024. AR=21%; Outstanding Paper Award (Top 0.4%)
5. Yang, Y., **Carlson, P.**, He, S., Qiao, Y., and Yang, T. Cluster-based partial dense retrieval fused with sparse text retrieval. In *Proceedings of the 47th International ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR '24)*. ACM, 2024. AR=24%
6. **Carlson, P.** and Donnelly, P. J. Deep learning approaches for sung vowel classification. In *Proceedings of the 13th International Conference of Evolutionary and Biologically Inspired Music, Sound, Art and Design (EvoMUSART '24)*, volume 14633, pages 67–83. Lecture Notes in Computer Science, Springer, 2024, doi:10.1007/978-3-031-56992-0_5
7. Donnelly, P. J. and **Carlson, P.** Transposition of simple waveforms from raw audio with deep learning. In *Proceedings of the 12th International Conference of Evolutionary and Biologically Inspired Music, Sound, Art and Design (EvoMUSART '23)*, volume 13988, pages 341–356. Lecture Notes in Computer Science, Springer, 2023, doi:10.1007/978-3-031-29956-8_22. AR=36%

PRESENTATIONS

1. **Carlson, P.** and Donnelly, P. J. Deep learning approaches for sung vowel classification. April 2024. Paper presented at the 13th International Conference of Evolutionary and Biologically Inspired Music, Sound, Art and Design (EvoMUSART '24). Aberystwyth, United Kingdom

2. **Carlson, P.** and Donnelly, P. J. Musical transposition directly from audio with deep recurrent neural networks. April 2021. Poster presented at the National Conference on Undergraduate Research (NCUR '21). (virtual)
3. **Carlson, P.** and Donnelly, P. J. Musical transposition directly from audio with deep recurrent neural networks. August 2020. Poster presented at Oregon State University's Celebrating Undergraduate Excellence (CUE '20). (virtual)

FELLOWSHIPS & AWARDS

University of California, Santa Barbara
- Regents in Computer Science Fellowship — AY2023; AY2027
- CS Department Summer Academic Fellowship — 2024
- Graduate Student Association Travel Grant — 2024

Oregon State University
- URSA Engage Research Scholarship — 2020

MENTORSHIP

Early Research Scholars Program (ERSP)
- Led groups of undergraduates to develop and complete a research project
- Met with the students weekly, giving lectures on important background material, answering research questions, solving technical problems, and providing career and academic advice
- Encouraged two 2023 cohort students in developing their successful graduate school applications

Project: *Query Classification for Dynamic Sparse-Dense Fusion* — Sep 2024– Present
- Mentees: Sophia Ismael, Sammy Lesner, Divya Subramonian, Hannah Zhang

Project: *Improving Access to Fast Retrieval: A PySerini Wrapper for PISA* — Sep 2023 – Jun 2024
- Mentees: Mitali Gaidhani, Leyang Ni, Palvi Sabherwal, Dalia Sebat

Individual Students Mentored:
- Rohil Shah — Oct 2024 – Present
- Leyang Ni — Jun 2024 – Sep 2024
- Palvi Sabherwal — Jun 2024 – Sep 2024

TEACHING

Graduate Teaching Assistant
- Taught weekly sections, helped to design class projects, and completed standard tasks

Courses:
- Operating Systems (CS 170) — Spring 2025
- Parallel Computing (CS 140) — Winter 2025
- Intro to Computer Science (CS 8) — Summer 2024

PROFESSIONAL SERVICE

Conference Reviewer
- ACM SIGIR Conference on Research and Development in Information Retrieval (SIGIR 2024, SIGIR 2025)

ADDITIONAL SKILLS

Languages
- English – *native*
- French – *conversational (DELF B2)*