

# ORION WELLER

Baltimore Maryland, 21218

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## EDUCATION

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<b>Johns Hopkins University</b>	2021 – 2026 (expected)
Ph.D. in Computer Science	GPA: 4.0/4.0
Center for Language and Speech Processing	
Advisors: Benjamin Van Durme and Dawn Lawrie	
<b>Brigham Young University</b>	2017 – 2021
Bachelor of Science, Summa Cum Laude (Top 1%)	GPA: 4.0/4.0
Majors: Computer Science, Statistics; Minor in Mathematics	

## AWARDS

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- NSF Graduate Research Fellowship, 2022
  - DoD NDSEG Fellowship (declined), 2022
  - CRA Outstanding Undergraduate Researcher in North America Award, 2021
  - Goldwater Scholarship, 2020

## INDUSTRY EXPERIENCE

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<b>Meta FAIR</b>	<i>with</i> Xilun Chen, Barlas Ouz, Scott Yih	2025
<b>Google DeepMind</b>	<i>with</i> Jinhyuk Lee, Michael Boratko, Iftexhar Naim	2025
<b>Samaya AI</b>	<i>with</i> Jack Hessel, Ashwin Paranjape, Yuhao Zhang	2024
<b>Allen Institute for AI (AI2)</b>	<i>with</i> Luca Soldaini, Kyle Lo, Arman Cohan	2023
<b>Apple</b>	<i>with</i> Matthias Sperber	2020, 2021
<b>Allen Institute for AI (AI2)</b>	<i>with</i> Matt Gardner, Matthew Peters	2020

## PUBLICATIONS

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- [1] **Orion Weller**, Michael Boratko, Iftexhar Naim, Jinhyuk Lee, “On the Theoretical Limitations of Embedding-Based Retrieval,” 2025.
  - [2] Marc Marone, **Orion Weller**, William Fleshman, Eugene Yang, Dawn Lawrie, Benjamin Van Durme, “mmBERT: A Modern Multilingual Encoder with Annealed Language Learning,” 2025.
  - [3] **Orion Weller**, Kathryn Ricci, Marc Marone, Antoine Chaffin, Dawn Lawrie, Benjamin Van Durme, “Seq vs Seq: An Open Suite of Paired Encoders and Decoders,” 2025.
  - [4] **Orion Weller**, Kathryn Ricci, Eugene Yang, Andrew Yates, Dawn Lawrie, Benjamin Van Durme, “Rank1: Test-Time Compute for Reranking in Information Retrieval,” *CoLM*, 2025.
  - [5] Eugene Yang, Andrew Yates, Kathryn Ricci, **Orion Weller**, Vivek Chari, Benjamin Van Durme, Dawn Lawrie, “Rank-K: Test-Time Reasoning for Listwise Reranking,” 2025.
  - [6] Giulio Corallo, **Orion Weller**, Fabio Petroni, Paolo Papotti, “Beyond RAG: Task-Aware KV Cache Compression for Comprehensive Knowledge Reasoning,” 2025.

- [7] **Orion Weller**, Benjamin Chang, Mahsa Yarmohammadi, Sam Barham, Sean MacAvaney, Arman Cohan, Luca Soldaini, Benjamin Van Durme, Dawn Lawrie, “mFollowIR: a Multilingual Benchmark for Instruction Following,” *ECIR*, 2025 **Honorable Mention Award (Top 8)**.
- [8] Benjamin Warner, Antoine Chaffin, Benjamin Clavié, **Orion Weller**, Oskar Hallström, Said Taghadouini, Alexis Gallagher, Raja Biswas, Faisal Ladhak, Tom Aarsen, Nathan Cooper, Griffin Adams, Jeremy Howard, Iacopo Poli, “Harder, Better, Faster, Longer: A Modern Bidirectional Encoder for Fast, Memory Efficient, and Long Context Finetuning and Inference,” *ACL*, 2025.
- [9] Kenneth Enevoldsen, Isaac Chung, Imene Kerboua, Márton Kardos, ... Sara Hooker, Chenghao Xiao, Vaibhav Adlakha, **Orion Weller**, Siva Reddy, Niklas Muennighoff, “MMTEB: Massive Multilingual Text Embedding Benchmark,” *ICLR*, 2025.
- [10] Long Phan, Alice Gatti, Ziwen Han, Nathaniel Li, Josephina Hu, Hugh Zhang, Chen Bo Calvin Zhang, Mohamed Shaaban, John Ling, ... **Orion Weller**, “Humanity’s last exam,” 2025.
- [11] Nathaniel Weir, Bhavana Dalvi, **Orion Weller**, Oyvind Tafjord, Sam Hornstein, Alexander Sabol, Peter Jansen, Benjamin Van Durme, Peter Clark, “From Models to Microtheories: Distilling a Model’s Topical Knowledge for Grounded Question Answering,” *ICLR*, 2025.
- [12] **Orion Weller**, Benjamin Van Durme, Dawn Lawrie, Ashwin Paranjape, Yuhao Zhang, Jack Hessel, “Promptriever: Instruction-Trained Retrievers Can Be Prompted Like Language Models,” *ICLR*, 2025.
- [13] Abe Bohan Hou, **Orion Weller**, Guanghui Qin, Eugene Yang, Dawn Lawrie, Nils Holzenberger, Andrew Blair-Stanek, Benjamin Van Durme, “CLERC: A Dataset for Legal Case Retrieval and Retrieval-Augmented Analysis Generation,” *NAACL*, 2025.
- [14] Dongwei Jiang, Jingyu Zhang, **Orion Weller**, Nathaniel Weir, Benjamin Van Durme, Daniel Khashabi, “Self-[In]correct: LLMs Struggle with Refining Self-Generated Responses,” *AAAI*, 2025.
- [15] **Orion Weller**, Benjamin Chang, Sean MacAvaney, Kyle Lo, Arman Cohan, Benjamin Van Durme, Dawn Lawrie, Luca Soldaini, “FollowIR: Evaluating and Teaching Information Retrieval Models to Follow Instructions,” *NAACL*, 2025.
- [16] Jeffrey Cheng, Marc Marone, **Orion Weller**, Dawn Lawrie, Daniel Khashabi, Benjamin Van Durme, “Dated Data: Tracing Knowledge Cutoffs in Large Language Models,” *Conference on Language Models (CoLM)*, 2024 **Outstanding Paper Award (Top 4)**.
- [17] Nathaniel Weir, Muhammad Khalifa, Linlu Qiu, **Orion Weller**, Peter Clark, “Learning to Reason via Program Generation, Emulation, and Search,” *NeurIPS*, 2024.
- [18] Brennon Brimhall, **Orion Weller**, Matthew Green, Ian Miers, “A Waterlog for Detecting and Tracing Synthetic Text from Large Language Models,” *Cryptology ePrint Archive*, 2024.
- [19] James Mayfield, Eugene Yang, Dawn Lawrie, Sean MacAvaney, Paul McNamee, Douglas W Oard, Luca Soldaini, Ian Soboroff, **Orion Weller**, Efsun Kayi, Kate Sanders, Noah Hibbler, “On the Evaluation of Machine-Generated Reports,” *SIGIR*, 2024 **Best Paper Award Nominee**.
- [20] Nathaniel Weir, Kate Sanders, **Orion Weller**, Shreya Sharma, Dongwei Jiang, Zhengping Zhang, Bhavana Dalvi Mishra, Oyvind Tafjord, Peter Jansen, Peter Clark, “Enhancing Systematic Decompositional Natural Language Inference Using Informal Logic,” *EMNLP*, 2024.
- [21] **Orion Weller**, Dawn Lawrie, Benjamin Van Durme, “NevIR: Negation in Neural Information Retrieval,” *EACL*, 2024.
- [22] **Orion Weller**, Kyle Lo, David Wadden, Dawn Lawrie, Benjamin Van Durme, Arman Cohan, Luca Soldaini, “When do Generative Query and Document Expansions Fail? A Comprehensive Study Across Methods, Retrievers, and Datasets,” *Findings of EACL*, 2024.

- [23] **Orion Weller**, Marc Marone, Nathaniel Weir, Dawn Lawrie, Daniel Khashabi, Benjamin Van Durme, ““According to...” Prompting Language Models Improves Quoting from Pre-Training Data,” *EACL*, 2024.
- [24] **Orion Weller**, Aleem Khan, Nathaniel Weir, Dawn J Lawrie, Benjamin Van Durme, “Defending Against Disinformation Attacks in Open-Domain Question Answering,” *EACL*, 2024.
- [25] **Orion Weller**, Marc Marone, Vladimir Braverman, Dawn Lawrie, Benjamin Van Durme, “Pre-trained Models for Multilingual Federated Learning,” *NAACL*, 2022.
- [26] **Orion Weller**, Kevin Seppi, Matt Gardner, “When to Use Multi-Task Learning vs Intermediate Fine-Tuning for Pre-Trained Encoder Transfer Learning,” *ACL*, 2022.
- [27] **Orion Weller**, Matthias Sperber, Telmo Pires, Hendra Setiawan, Christian Gollan, Dominic Telaar, Matthias Paulik, “Speech Translation for Code-Switched Speech,” *Findings of ACL*, 2022.
- [28] Wilson Fearn, **Orion Weller**, Kevin Seppi, “Exploring the Relationship Between Algorithm Performance, Vocabulary, and Run-Time in Text Classification,” *NAACL*, 2021.
- [29] **Orion Weller**, Matthias Sperber, Christian Gollan, Joris Kluivers, “Streaming Joint Speech Translation and Transcription,” *EACL*, 2021.
- [30] **Orion Weller**, Luke Sagers, Carl Hanson, Quinn Snell, Michael Barnes, Shannon Tass, “Predicting Suicidal Thoughts and Behavior among Adolescents using the Risk and Protective Factor Framework: a Large-Scale Machine Learning Approach,” *Plos One*, 2021.
- [31] **Orion Weller**, Nicholas Lourie, Matt Gardner, Matthew Peters, “Learning from Task Descriptions,” *EMNLP*, 2020.
- [32] **Orion Weller**, Nancy Fulda, Kevin Seppi, “Can Humor Prediction Datasets be used for Humor Generation? Humorous Headline Generation via Style Transfer,” *FigLang @ ACL*, 2020.
- [33] **Orion Weller**, Kevin Seppi, “The rJokes Dataset: a Large Scale Humor Collection,” *LREC*, 2020.
- [34] **Orion Weller**, Kevin Seppi, “Humor Detection: a Transformer Gets the Last Laugh,” *EMNLP*, 2019.

## SKILLS

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<b>Languages</b>	English (native), Portuguese (intermediate), French (basic)
<b>Programming Languages</b>	Main: Python, Basic: C++, R, Javascript, SQL
<b>Frameworks &amp; Tools</b>	PyTorch, Linux, Mechanical Turk, Django, VueJS

## SERVICE

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### Workshop Organizer

- Scholarly Document Processing (SDP) Workshop at ACL, 2024
- Mid-Atlantic Student Colloquium on Speech, Language and Learning, 2022-2025

### Teaching

- EN.500.111: Reasoning with ChatGPT, Johns Hopkins University, Fall 2023
- After School Coding Instructor for Elementary School with Code in the Schools, 2021-2022

### Program Committee

- **Reviewer:** NeurIPS, ICLR, ACL, EMNLP, NAACL, CoLM, and ARR
- **Area Chair:** ARR (2024–2025)