

Alon Albalak

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About Me

I am a Ph.D candidate in the Computer Science Department at the University of California, Santa Barbara, and a member of the NLP Group, co-advised by William Yang Wang and Xifeng Yan.

My primary research focus is on applying ML methods to NLP to improve data efficiency and model performance. In my research I have explored the use of methods including multi-armed bandits, data selection, multitask learning, transfer learning, reinforcement learning, and neuro-symbolic methods. Additionally, I have a wide array of interests in other topics including model efficiency, logic and reasoning, conversational AI, and multilingual models.

Education

2018–present *Ph.D, Computer Science, University of California, Santa Barbara.*

[UCSB NLP Group](#)

Advisors: [William Yang Wang](#) and [Xifeng Yan](#)

2016–2018 *B.S., Mathematics, Wayne State University.*

Selected Publications ([Full publication list](#))

- 2023 *Improving Few-Shot Generalization by Exploring and Exploiting Auxiliary Data.*
[Alon Albalak](#), Colin Raffel, William Yang Wang
NeurIPS, Main Conference, [Paper](#) [\[code\]](#) [\[presentation\]](#)
- 2023 *Efficient Online Data Mixing For Language Model Pre-Training.*
[Alon Albalak](#), Liangming Pan, Colin Raffel, William Yang Wang
NeurIPS, Workshop on Robustness of Few-shot and Zero-shot Learning in Foundation Models, [Preprint](#)
- 2023 *RWKV: Reinventing RNNs for the Transformer Era.*
Bo Peng*, Eric Alcaide*, Quentin Anthony*, [Alon Albalak](#), ...
EMNLP, Findings, [Paper](#) [\[code\]](#)
- 2023 *Logic-LM: Empowering Large Language Models with Symbolic Solvers for Faithful Logical Reasoning.*
Liangming Pan, [Alon Albalak](#), Xinyi Wang, William Yang Wang
EMNLP, Findings, [Paper](#) [\[code\]](#)
- 2023 *CausalDialogue: Modeling Utterance-level Causality in Conversations.*
Yi-Lin Tuan, [Alon Albalak](#), Wenda Xu, Michael Saxon, Connor Pryor, Lise Getoor, William Yang Wang
ACL, Findings, [Paper](#) [\[code\]](#)
- 2023 *Addressing Issues of Cross-Linguality in Open-Retrieval Question Answering Systems For Emergent Domains.*
[Alon Albalak](#), Sharon Levy, William Yang Wang.
EACL, Demonstration Track. [Paper](#) [\[code\]](#)
- 2023 *NeuPSL: Neural Probabilistic Soft Logic.*
Connor Pryor, Charles Dickens, Eriq Augustine, [Alon Albalak](#), William Wang, L. Getoor
IJCAI, Main Conference, [Paper](#) [\[code\]](#)

- 2022 *FETA: A Benchmark for Few-Sample Task Transfer in Open-Domain Dialogue*.
Alon Albalak, Yi-Lin Tuan, Pegah Jandaghi, Connor Pryor, Luke Yoffe, Deepak Ramachandran, Lise Getoor, Jay Pujara, William Yang Wang.
EMNLP, Main Conference. [Paper](#) [code](#)
- 2022 *An Exploration of Methods for Zero-shot Transfer in Small Language Models*.
Alon Albalak, Akshat Shrivastava, Chinnadhurai Sankar, Adithya Sagar, Mike Ross
NeurIPS, Efficient Natural Language and Speech Processing Workshop. [Paper](#)
- 2022 *Efficient Learning Losses for Deep Hinge-Loss Markov Random Fields*.
Charles Dickens, Connor Pryor, Eriq Augustine, Alon Albalak, Lise Getoor
UAI, Workshop on Tractable Probabilistic Modeling. [Paper](#)
- 2022 *Making Something out of Nothing: Building Robust Task-oriented Dialogue Systems from Scratch*.
Zekun Li, Hong Wang, Alon Albalak, Yingrui Yang, Jing Qian, Shiyang Li, Xifeng Yan
Alexa Prize Taskbot Challenge 2022. [Paper](#)
- 2022 *D-REX: Dialogue Relation Extraction with Explanations*.
Alon Albalak, Varun Embar, Yi-Lin Tuan, Lise Getoor, William Yang Wang.
ACL, NLP for Conversational AI Workshop. [Paper](#) [code](#)
- 2021 *Systems and methods for determining and using semantic relatedness to classify segments of text*.
Rohit Jain, Devin H. Redmond, Richard B. Sutton, Alon Albalak, Sharon Huffner.
US Patent US20210279420A1
- 2021 *Modeling Disclosive Transparency in NLP Application Descriptions*.
Michael Saxon, Sharon Levy, Alon Albalak, Xinyi Wang, William Yang Wang
EMNLP, Main Conference. [Paper](#)

Selected Projects

- February 2021 – *Recommender Dialogue Systems, in collaboration with UCSC, USC, Google*.
present
- o Actively collaborating with researchers across institutions to solve problems in dialogue systems such as explainability, information extraction, and zero- or few-shot dialogue classification tasks
 - o **Resulting Publications:** [FLAD](#), [FETA](#), [NeuPSL](#), [D-REX](#)
- Advisors : Industry - [William W. Cohen](#) and [Tania Bedrax-Weiss](#)
Academic - [William Yang Wang \(UCSB\)](#), [Lise Getoor \(UCSC\)](#), and [Jay Pujara \(USC\)](#)
- June 2021 – *Alexa Prize Taskbot Challenge, Team Lead*.
June 2022
- o 8% acceptance rate
 - o Led and advised UCSB's "Team GauchoBot" in developing an agent that assists real Alexa customers to complete cooking and do-it-yourself projects that require multiple steps and complex decision making
 - o Designed algorithms for intent classification and question answering as well as the communication architecture between modules
 - o **Resulting Publication:** [Making Something out of Nothing](#)
- May 2021 – *COVID(ATAACK), in collaboration with IARPA and Peraton Labs*.
- October 2021
- o Mentored a visiting undergraduate researcher
 - o Built a multilingual open-retrieval question answering system for COVID-related journal articles and a clinical trials database
 - o Designed and implemented:
 - a multilingual deep semantic indexing method to retrieve relevant documents
 - a multilingual reading comprehension system to find answers within a document
 - o **Resulting Publication:** [Paper](#)/[code](#)

Professional Experience

June 2022 – *Research Science Intern, Meta AI.*

- September 2022
 - Directed and executed on 2 projects in collaboration with researchers across the company
 - Explored data-efficiency through the use of multi-task learning and various prompting methods for small language models
 - Explored the use of parameter-efficient methods for zero-shot generalization
 - Resulting Publications:** [Data-Efficiency with a Single GPU](#)

June 2019 – *Research Associate, Theta Lake.*

- September 2020
 - Built classifiers for automated risk detection in regulated industries through the use of natural language processing and other machine learning techniques
 - Took multiple projects from inception to production, and developed 2 patent pending methods along the way
 - Resulting Patent:** US Patent US20210279420A1

December 2017 – *Machine Learning Research Associate, Machine Vision and Pattern Recognition Lab, Wayne State University.*

- September 2018
 - Research funded by the Epilepsy Foundation, titled "The Sound of Seizures"
 - Built computer vision based CNN-LSTM model predicting the onset of seizures with 91% accuracy
 - Optimized neural network in Keras/TensorFlow for portability to mobile devices

Fellowships & Awards

2023 *Neurips Scholar Award, 37th Conference on Neural Information Processing Systems.*

2018 *Integrative Graduate Education and Research Traineeship (IGERT) Fellow, University of California, Santa Barbara.*

2018 *Academic Excellence Fellowship, University of California, Santa Barbara.*

2018 *Chia Kuei Tsao Award, Wayne State University.*

For outstanding academic achievement in the undergraduate mathematics program

Service & Outreach

ACL 2023-24 Workshop Organizer - NLP For Conversational AI ([NLP4ConvAI](#))

ACL 2023 Social Organizer - Mindfulness meditation in a time of NLP hyperactivity

NeurIPS 2022 Workshop Organizer - Transfer Learning for NLP ([TL4NLP](#)): Insights and Advances on Positive and Negative Transfer. [Proceedings](#).

2022-2024 Program Committee: ACL, NAACL, EMNLP, AAAI

Technical skills

Tools Python, C++, Shell, AWS, Azure

Packages PyTorch, TensorFlow, Keras, NumPy, SciPy

Machine Learning Natural language processing (NLP), computer vision (CV), transformers, sequence to sequence models, statistical analysis, regression, clustering

Teaching Experience

Spring, 2020 *CS 165a: Artificial Intelligence - Lead TA.*

Fall 2020 – *CS 9: Object Oriented Programming.*
Spring 2021

Military Experience

2012 – 2015 *Reconnaissance Sabotage Unit, Israel Defense Forces.*

- Engineering, demolitions, and reconnaissance specialty training
- Battalion lead navigator