

Alon Albalak

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About Me

I am a Ph.D student in the Computer Science Department at the University of California, Santa Barbara, co-advised by William Yang Wang and Xifeng Yan. My work lies at the intersection of natural language processing and machine learning. I mainly focus on data efficiency in NLP through transfer learning and neuro-symbolic methods.

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](#))

- 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 2022, 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
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
5th 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.
NLP for Conversational AI Workshop, ACL 2022. [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 2021, Main Conference. [Paper](#)

Selected Preprints

- 2023 *Improving Few-Shot Generalization by Exploring and Exploiting Auxiliary Data.*
[Alon Albalak](#), Colin Raffel, William Yang Wang
[Preprint](#) [\[code\]](#)

- 2022 *CausalDialogue: Modeling Utterance-level Causality in Conversations*.
Yi-Lin Tuan, [Alon Albalak](#), Wenda Xu, Michael Saxon, Connor Pryor, Lise Getoor, William Yang Wang
[Preprint](#)
- 2022 *NeuPSL: Neural Probabilistic Soft Logic*.
Connor Pryor, Charles Dickens, Eriq Augustine, [Alon Albalak](#), William Wang, L. Getoor
[Preprint](#)

Selected Projects

- February 2021 – present *Recommender Dialogue Systems, in collaboration with UCSC, USC, Google*.
- 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:** [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(ATAK), 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
- o Directed and executed on 2 projects in collaboration with researchers across the company
 - o Explored data-efficiency through the use of multi-task learning and various prompting methods for small language models
 - o Explored the use of parameter-efficient methods for zero-shot generalization
 - o **Resulting Publications:** [Data-Efficiency with a Single GPU](#)
- June 2019 – *Research Associate, Theta Lake*.
- September 2020
- o Built classifiers for automated risk detection in regulated industries through the use of natural language processing and other machine learning techniques
 - o Took multiple projects from inception to production, and developed 2 patent pending methods along the way
 - o **Resulting Patent:** US Patent US20210279420A1
- December 2017 – *Machine Learning Research Associate, Machine Vision and Pattern Recognition Lab, Wayne State University*.
- September 2018
- o Research funded by the Epilepsy Foundation, titled "The Sound of Seizures"
 - o Built computer vision based CNN-LSTM model predicting the onset of seizures with 91% accuracy
 - o Optimized neural network in Keras/TensorFlow for portability to mobile devices
- July 2016 – *Research Assistant, Robotic Rehabilitation and Neurophysiology Lab, Wayne State University*.
- July 2017
- o Custom built an arduino controlled lower limb exoskeleton
 - o Implemented neural network on motor cortex EEG data to control exoskeleton using python and matlab
 - o Built system to control a motorized wheelchair through EEG and EMG with a deep neural network

Fellowships & Awards

- 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

- NeurIPS 2022 Workshop Organizer - Transfer Learning for NLP ([TL4NLP](#)): Insights and Advances on Positive and Negative Transfer
- 2022-2023 Program Committee: NAACL 2022, EMNLP 2022, AAAI 2023

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

Military Experience

- 2012 – 2015 *Reconnaissance Sabotage Unit, Israel Defense Forces.*
- o Engineering, demolitions, and reconnaissance specialty training
 - o Battalion lead navigator