

# Alex Lyman

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## RESEARCH INTERESTS

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My research interests lie at the intersection of NLP, ML, and Computational Linguistics. I'm most interested in understanding and overcoming the limitations of large language models, particularly in grounded and low-resource contexts.

## EDUCATION

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<b>University of Pennsylvania</b> <i>Master's in Computer and Information Technology</i>	Philadelphia, PA <i>May 2022</i>
<b>Brigham Young University</b> <i>BA Linguistics, Minor Digital Humanities</i>	Provo, UT <i>Apr 2019</i>

## PRESENTATIONS AND PAPERS

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<b>Assessing Verbal Eyewitness Confidence Statements Using an NLP Approach</b> <i>Annual Conference of the American Psychology-Law Society</i>	Philadelphia, PA <i>Mar 2023</i>
<b>Stylometric Authorship Inference Using Consensus Networks</b> <i>FAIR Conference</i>	Provo, UT <i>Aug 2021</i>
<b>Qualifying Fiction Writing with Machine Learning</b> <i>University of Utah Student Conference in Linguistics</i>	Salt Lake City, UT <i>Apr 2019</i>

## PROFESSIONAL EXPERIENCE

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<b>Graduate Research Assistant</b> <i>University of Pennsylvania Carey Law School</i> <ul style="list-style-type: none"><li>Developed RoBERTa-based tool for evaluating eyewitness confidence statements.</li><li>Worked with interdisciplinary team to integrate law literature and NLP techniques.</li></ul>	Oct 2021–Mar 2023 <i>Philadelphia, PA</i>
<b>Researcher</b> <i>LTAC Global</i> <ul style="list-style-type: none"><li>Train and deploy models for text classification and authorship identification.</li><li>Participate in outreach through presentations and articles.</li><li>Interview, train, and oversee several employees.</li><li>Implement interactive web tools and visualizations for public use.</li></ul>	Sep 2019–Present <i>Provo, UT</i>
<b>Research Intern</b> <i>J. Reuben Clark Law School</i> <ul style="list-style-type: none"><li>Worked on Corpus of Founding-Era American English, validating transcriptions and tagging source documents.</li><li>Tagged 1000+ letters, speeches, and other documents by author, language, and topic.</li></ul>	Sep 2018–Mar 2019 <i>Provo, UT</i>
<b>Topology Coder</b> <i>Traffic Technology Services</i> <ul style="list-style-type: none"><li>Provided personalized GPS data for integration with live traffic signal infrastructure.</li><li>Hand-coded intersection data for over 5,000 traffic signals nationwide.</li><li>Utilized in-house software to validate GPS data.</li></ul>	Jun 2016–Apr 2020 <i>Beaverton, OR</i>

## AWARDS, HONORS, CERTIFICATIONS

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<b>Winner:</b> Gradio NYC Hackathon	Aug 2022
<b>ACTFL Certification:</b> Portuguese, Advanced Mid	Apr 2019
<b>Induction:</b> Phi Lambda Beta, Portuguese National Honors Society	Nov 2018
<b>Dean's List:</b> BYU College of Humanities	2017-2019

## TEACHING AND LEADERSHIP EXPERIENCE

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### Community Youth Advisor

Oct 2021–Present

*The Church of Jesus Christ of Latter-day Saints*

*Philadelphia, PA*

- Supervise bi-weekly activities and meetings of 15+ teenagers.
- Teach lessons and lead seminars in life skills and physical, social, and emotional well-being.

### Vice President

Sep 2016–Apr 2019

*BYU Linguistics and English Language Society*

*Provo, UT*

- Planned and executed several activities for 100+ students.
- Collaborated with other university departments and student societies in planning and carrying out activities.
- Oversaw assignments and took minutes of society meetings.

### Volunteer Representative

Nov 2013–Dec 2015

*The Church of Jesus Christ of Latter-day Saints*

*Buenos Aires, AR*

- Taught 500+ lessons in Spanish including addiction recovery and self-reliance courses.
- Provided weekly English classes in several community centers.

## TECHNICAL SKILLS

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**Natural Languages:** English (Native), Spanish (Fluent), Portuguese (Proficient)

**Programming Languages:** Python, JavaScript, HTML/CSS, C/C++, LaTeX

**Libraries:** PyTorch, Transformers, Pandas, NumPy, SpaCy, scikit-learn, Matplotlib, D3.js

## PROJECTS

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**Middle English Translator** | *BART, T5, bs4, HuggingFace*

Aug 2022

- Implemented the first Machine Translation system for translating Modern English to Middle English.
- Collected data and aligned over 40000 parallel sentences and phrases.
- Created and deployed public-facing interface for model.
- Achieved SacreBLEU score of 19.
- 300+ upvotes on Reddit.

**Semantic Mapping** | *Python, MPNet, UMAP, D3.js, HTML Canvas*

Jun 2022

- Developed tool for visualizing texts from sentence embeddings.
- Built interactive web interface for both touchscreen and keyed environments.
- Trained multiple employees to use tool and create visualizations.

**MtG CreatureGen** | *GPT-3, BERT, StableDiffusion, Dreambooth*

Mar–Nov 2022

- Designed and implemented human-in-the-loop pipeline for generating text and images for Magic: the Gathering cards.
- Created probabilistic and n-gram models, in addition to fine-tuning image and language models.
- 150+ downloads of image model from HuggingFace Hub.

## REFERENCES

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### Paul J. Fields

Senior Partner  
Breakthrough Consulting Group  
pjfphd@comcast.net

### Paul Heaton

Professor of Law and Academic  
Director, Quattrone Center  
pheaton@law.upenn.edu

### Chris Callison-Burch

Associate Professor, Natural  
Language Processing  
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