

Kelley Lynch

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SUMMARY

Computer Science PhD Candidate specializing in Computational Linguistics, Multimedia AI, and Vision-Language Models (VLMs). Expertise in agentic systems, prompt optimization, multimodal data annotation, and ontology development for information extraction in archival and industry contexts.

SKILLS

AI/ML: Vision-Language Models, Large Language Models, Agent Design & Orchestration, Prompt Optimization (DSPy), Evaluation Frameworks, Data Annotation, NLP, Computer Vision
Tools: Python, Go, PyTorch, OpenCV, Flask, Elasticsearch, Docker
Domains: Multimedia Information Extraction, Ontology Development, Conversational AI, Synthetic Data Generation, MMIF

EXPERIENCE

- **Ph.D. Candidate, Computer Science** Aug 2017 – Present
Brandeis University Waltham, MA
 - **CLAMS Agent (Thesis):** Designing an LLM/VLM-powered agentic system to orchestrate multimedia metadata extraction
 - **SDK & Tools:** Integrating LLM interfaces into the CLAMS SDK; building apps like smolvlm2 for multimodal analysis
 - **Slates-500 Dataset:** Created a multimodal dataset and evaluation pipeline for information extraction from archival video slates
 - **Hawaii Chyron Dataset:** Curated a dataset for extracting Hawaiian language text from broadcast video using OCR and VLMs
- **Research Scientist** Sep 2022 – Jan 2024
Posh Inc. Boston, MA
 - Led ontology development for enterprise conversational AI to improve intent recognition and dialogue flow
 - Analyzed customer interactions to identify edge cases, expand conversational models, and improve accuracy
 - Evaluated and optimized production AI models for scalable chatbot deployments
- **ML Research Intern** May 2022 – Aug 2022
Cobalt Boston, MA
 - Evaluated GPT-3 for generating synthetic conversational data to train downstream models
 - Developed automated, NLP-driven summarization methods for customer support calls
- **NLP Research Consultant** May 2019 – May 2021
Boozby Inc. Sausalito, CA (Remote)
 - Designed and tested end-to-end NLP pipelines for feature extraction and narrative analysis on large fiction collections

SELECTED PUBLICATIONS & PRESENTATIONS

- **CLAMS Platform** Core developer and coauthor
 - Rim, King, **Lynch**, Verhagen, Pustejovsky. *A Platform for AI-Assisted Archival Metadata Generation*. HCI International, 2025.
 - **Lynch**, Rim, King, Pustejovsky. *Multimodal Interoperability with the CLAMS Platform*. MMM 2025 (Demo).
 - Verhagen, **Lynch**, Rim, Pustejovsky. *The CLAMS Platform at Work*. LREC 2022.
 - Rim, **Lynch**, Verhagen, Ide, Pustejovsky. *Interchange Formats for Visualization: LIF and MMIF*. LREC 2020.
 - Rim, **Lynch**, Pustejovsky. *Computational Linguistics Applications for Multimedia Services*. LaTeCH-CLfL 2019.
 - Workshop: *Indexing the American Archive of Public Broadcasting*. Fantastic Futures 2019, Stanford.
 - Cariani, Pustejovsky, **Lynch**, Davis-Kaufman. *Automated Creation of Descriptive Metadata for Large Media Archives*. JTS 2019, Amsterdam.
- **Slates-500 Dataset**
 - Multimodal dataset and evaluation pipeline for information extraction from archival video slates. Under review.
- **Hawaii Chyron Dataset**
 - Understanding On-Screen Text: Do AI Tools Struggle with Hawaiian Chyrons? IASA Journal (in review).
 - Presentations: IASA Conference, Honolulu (2025); Fantastic Futures Conference (2025).
- **Video Content Summarization**
 - **Lynch**, Jiang, Lambright, Rim, Pustejovsky. *Video Content Summarization with Large Language-Vision Models*. IEEE Big Data (CAS Workshop), 2024.
 - Presentation: Boston Digital Humanities Symposium, 2025.

EDUCATION

- **Ph.D., Computer Science – Brandeis University** Expected 2026
- **M.A., Computational Linguistics – Brandeis University** 2017
- **B.S., Mathematics and French – Centre College** 2013