

Sai Karthik Kosuri

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RESEARCH INTERESTS

Natural language processing; trustworthy and human-in-the-loop LLM systems; scientific and medical information extraction; evidence-grounded reasoning and evaluation; multimodal NLP for health.

EDUCATION

M.S., Computer Science, Syracuse University Syracuse, NY
Aug 2022 – May 2024 · GPA 3.8/4.0

B.Tech., Computer Science and Engineering, Vellore Institute of Technology Vellore, India
Jul 2017 – Jun 2021 · GPA 8.49/10

RESEARCH EXPERIENCE

AI/NLP Researcher, University of Pennsylvania Philadelphia, PA
Jun 2024 – Present

Center for Integrative Global Oral Health; previously with Penn NLP in the Department of Computer and Information Science. Research mentors and collaborators: Chris Callison-Burch, Alonso Carrasco-Labra, Michael Glick, Sharath Chandra Guntuku, and Lyle Ungar.

- **EviStreams** (lead developer). Human-in-the-loop platform for AI-assisted data extraction in systematic reviews. Converts clinician-authored extraction forms into validated DSPy pipelines through a LangGraph-orchestrated workflow, with provenance tracking, expert adjudication, and field-level evaluation against ground-truth annotations. Across four clinical corpora and three model families, extraction quality depended more on how fields were specified than on the underlying model. *EMNLP 2026 System Demonstrations*.
- **Living evidence synthesis in oral health**. Applied the extraction platform to evidence from RCTs supporting living clinical guideline updates, standardizing outputs into a FHIR-aligned schema with consistent evidence grading. *Poster, IADR/AADOCR/CADR 2026*.
- **Scientific claim verification** (DARPA-funded). Built a retrieval corpus of 45K scientific papers and a multi-agent verification system that coordinates domain-expert LLM agents to produce scored, evidence-backed verdicts on materials science claims. Implemented document conversion and chunking, GTE-ModernColBERT retrieval with Weaviate, and an MCP query service.
- **Speech, language, and loneliness in older adults**. Multimodal analysis of 1,465 semi-structured interviews from 310 participants, combining linguistic features (LIWC, LDA, n-grams) with acoustic features (openSMILE, librosa, Whisper embeddings). Combining what participants said with how they said it predicted loneliness better than either signal alone. Co-developed the analysis with V. Khandode. *arXiv preprint, 2026*.
- **Longitudinal social media and mental health study**. Built the study infrastructure: a data-collection web application used by 5,000+ participants; Python ETL integrating Qualtrics surveys, secure uploads, and social media data into a normalized MySQL schema; and automated survey scheduling and payment workflows.
- **Open source**. Contributor to DLATK (Differential Language Analysis ToolKit): added Hugging Face pipeline integration (add_pipeline) and ConvoKit export.

PUBLICATIONS

Peer-reviewed

1. **S. K. Kosuri**, A. S. Bhosale, M. Glick, A. Carrasco-Labra, C. Callison-Burch. **EviStreams: Human-in-the-Loop AI Data Extraction for Systematic Reviews in Medicine**. *Proceedings of EMNLP 2026, System Demonstrations*. To appear. arXiv:2609.27418. [demo] [code]

Preprints

2. V. Khandode, **S. K. Kosuri**, N. K. R. Sehgal, A. Greene, E. Alpoge, E. Duffy, M. L. Smith, T. K. M. Cudjoe, S. C. Guntuku. **Predictors of Loneliness in Older Adults Using Multimodal Analysis of Speech and Language**. *arXiv:2609.02606*, 2026. [code]

PRESENTATIONS

- **System demonstration** (upcoming, Oct 2026). *EviStreams: Human-in-the-Loop AI Data Extraction for Systematic Reviews in Medicine*. EMNLP 2026.
- **Poster** (Mar 2026). *AI-Enhanced Living Evidence Synthesis in Oral Health*. **S. K. Kosuri**, A. S. Bhosale, F. Verdugo-Paiva, O. Urquhart, C. Martins-Pfeifer, M. Glick, A. Carrasco-Labra, C. Callison-Burch. IADR/AADOCR/CADR General Session, San Diego, CA (Evidence-based Dentistry, no. 2040).

TEACHING

Graduate Teaching Assistant, Syracuse University, Department of Computer Science
Aug 2022 – Dec 2023

Syracuse, NY

- Cybersecurity (undergraduate), instructor Andrew Lee.

HONORS AND AWARDS

- Merit scholarship (30% tuition), M.S. in Computer Science, Syracuse University, 2022–2024.

PRIOR INDUSTRY EXPERIENCE

Data Analyst Intern, Siemens Healthineers
Jun 2023 – Aug 2023

Cary, NC

- Built Power Apps tooling for search, reporting, and data entry in the operations department; migrated analytics from Power BI to Qlik Sense; automated Teradata data extraction with Python and SQL.

Software Engineer (Intern, then full-time), Broadridge Financial Solutions
Apr 2021 – Jul 2022

Hyderabad, India

- Built TypeScript/Angular and Go services on AWS; automated infrastructure with Terraform and Jenkins CI/CD; introduced Splunk dashboards and GitLab-to-Jira automation for issue tracking.

TECHNICAL SKILLS

Languages: Python, R, SQL, Go, Java, TypeScript/JavaScript, C++, Bash.

ML / NLP: PyTorch, Hugging Face, scikit-learn, DSPy, LangGraph, ColBERT, Weaviate, LIWC, openSMILE, librosa, Whisper.

Systems: Docker, Kubernetes, Terraform, MySQL, MongoDB, FastAPI.

Certification: AWS Certified Solutions Architect – Associate.