

KALVIN CHANG

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EDUCATION

University of California, Berkeley

Berkeley, CA

Doctor of Philosophy in Computer Science

Aug 2025 - May 2030 (expected)

Advisor: Alane Suhr

Selected courses: Data-Centric LLMs, Large-Scale Vision-Language & Action Models

Carnegie Mellon University (CMU)

Pittsburgh, PA

Master of Science in Language Technologies, School of Computer Science

Jan 2022 - May 2023

GPA: 4.28/4.33 (Rank: 1/18), Advisor: David Mortensen

Selected courses: Speech Processing, Multilingual NLP, Computational Ethics of NLP, ML for Structured Data (probabilistic graphical models), Phonetics & Phonemics, Phonology

Bachelor of Science in Computer Science

Aug 2018 - Dec 2021

GPA: 3.67/4.0 (University Honors), Concentration in Human-Computer Interaction

Courses: Design & Analysis of Algorithms, Distributed Systems, Designing Human-Centered Software

RESEARCH EXPERIENCE

Berkeley AI Research Lab

Berkeley, CA

Graduate Research Assistant, Advisor: Prof. Alane Suhr

Aug 2025 - present

- Building speech-to-speech reasoning and test-time adaptation for speech language models

Tencent AI Labs, Multimodal Understanding Team

Bellevue, WA

AGI Research Intern, Supervisors: Dr. Dong Yu, Dr. Yiwon Shao

Mar 2025 - May 2025

- Built a speech encoder with cross-dialect semantic alignment without paired translation data
- Trained a state-of-the-art Zipformer Chinese dialect ASR model with distributed training (32 GPUs)

CMU WAVLab & ChangeLingLab

Pittsburgh, PA

Visiting Scholar, Advisors: Prof. Shinji Watanabe, Prof. David Mortensen

Aug 2024 - Feb 2025

- Secured a NSF grant (\$1,000,000) on in-context learning for low-resource ASR using historical linguistics
- Trained open source, speech-to-text foundation model for universal phone recognition (under review)
- Created 3 linguistic datasets for speech LM instruction-following benchmark (Huang *et al.* 2025)

CMU Language Technologies Institute

Pittsburgh, PA

Graduate Research Assistant, Advisor: Prof. David Mortensen

Jan 2022 - May 2023

- Discovered bias in self-supervised speech models against African American English (Interspeech 2024)
- Collected Taiwanese corpus for end-to-end ASR with self-supervised speech features (ASRU 2023)
- Set state-of-the-art on protoform reconstruction with a Transformer encoder-decoder model (ACL 2023)
- Built a neural pipeline matching 87.6% of a linguist's language family tree (LChange 2023)
- Expanded open-source G2P package's coverage of 7 low-resource Chinese varieties, enabling the collection of 67,000+ pronunciations to address gap in comparative Chinese datasets (Coling 2022)
- Proposed metric learning & masked LM for learning phonetic word embeddings (LREC-Coling 2024)

Amazon Web Services, Responsible AI Team

Seattle, WA

Machine Learning Engineer Intern, Supervisor: Dr. Alicia Sagae

May 2022 - Aug 2022

- Designed a phonetic feature space to cluster high error ASR utterances for debiasing, capturing phonetic (pronunciation) variation across regional dialects of English with wav2vec 2.0

PUBLICATIONS

- [Interspeech 2025] Yan *et al.* *CS-FLEURS: A Massively Multilingual and Code-Switched Speech Dataset.*
- [ACL 2025] A. Naik *et al.* *Programming by Example meets Historical Linguistics: A Large Language Model Based Approach to Sound Law Induction*
- [ICLR 2025] C. Huang *et al.* *Dynamic-SUPERB Phase-2: A Collaboratively Expanding Benchmark for Measuring the Capabilities of Spoken Language Models with 180 Tasks.*
- [NAACL 2025] K. Choi, E. Yeo, **K. Chang**, S. Watanabe, and D. Mortensen. *Leveraging Allophony in Self-Supervised Speech Models for Atypical Pronunciation Assessment.*
- [Interspeech 2024] **K. Chang***, Y. Chou*, J. Shi, H. Chen, N. Holliday, O. Scharenborg, and D. Mortensen. *Self-supervised Speech Representations Still Struggle with African American Vernacular English.* **Honorable Mention, Special Session on Responsible Speech Foundation Models.**
- [IEEE ASRU 2023] Y. Chou*, **K. Chang***, *et al.* *Evaluating Self-Supervised Speech Models on a Taiwanese Hokkien Corpus.*
- [ACL 2023] Y.M. Kim*, **K. Chang***, C. Cui, and D. Mortensen. *Transformed Protoform Reconstruction.* **Oral Presentation.**
- [LChange 2023] **K. Chang***, N. Robinson*, A. Cai*, T. Chen, A. Zhang, and D. Mortensen. *Automating Sound Change Prediction for Phylogenetic Inference: A Tukanooan Case Study.* **Oral Presentation.**
- [LREC-Coling 2024] V. Zouhar*, **K. Chang***, C. Cui, N. Carlson, N. Robinson, M. Sachan, and D. Mortensen. *PWESuite: Phonetic Word Embeddings and Tasks They Facilitate.*
- [LREC-Coling 2024] R. Shim*, **K. Chang***, and D. Mortensen. *Phonotactic Complexity across Dialects.*
- [Coling 2022] **K. Chang**, C. Cui, Y.M. Kim, and D. Mortensen. *WikiHan: A New Comparative Dataset for Chinese Languages.*
- [under review] C. Li*, **K. Chang***, S. Bharadwaj, E. Yeo, K. Choi, J. Zhu, D. Mortensen, S. Watanabe. *POWSM: A Phonetic Open Whisper-Style Speech Foundation Model.*

* denotes equal contribution.

Academic Service

Volunteer: UC Berkeley EECS Equal Access to Application Assistance Program

Reviewer: NAACL 2025, *Speech Communication*

WORK EXPERIENCE

Amazon Web Services

Seattle, WA

Software Development Engineer, Test Generation Team

Aug 2023 - Aug 2024

- Experimented with prompt engineering (prompt chaining, few shot) for LLM-based test generation
- Created feedback loop to fix runtime errors with chain-of-thought, doubling number of executable tests
- Designed automatic evaluation suite for LLM-generated tests for 384 AWS services in an ECS container

Software Development Engineer Intern, EC2 Quality Team

Jun 2021 - Aug 2021

- Implemented pagination & presigned URL for website diagnosing EC2 Instances during on-call
- Caught elusive bug in the AWS Java SDK with two SDK teams, leading to a bug fix

Cardinal Blue Software, Inc.

Taipei, Taiwan

Server Developer Intern

Feb 2020 - Jul 2020

- Transitioned PostgreSQL database to transactional pooling, increasing scalability 18-fold

AWARDS

UC Berkeley EECS Department Fellowship	<i>Aug 2025</i>
Apple AI Residency, Finalist (80 / 6000)	<i>Feb 2025</i>
Gates Cambridge Scholarship, University of Cambridge (35 / 600 U.S. recipients)	<i>Jan 2025</i>
Honorable Mention, Responsible Speech Foundation Models, Interspeech	<i>Sep 2024</i>
University Honors, Carnegie Mellon University	<i>May 2022</i>
Dean's List with High Honors, CMU School of Computer Science	<i>Fall 2020, Spring 2021, Fall 2021</i>

TEACHING EXPERIENCE

Teaching Assistant, Introduction to Machine Learning *Fall 2022*

- Developed coursework for 400+ students, which covered Hidden Markov Models and gradient descent

Teaching Assistant, Principles of Functional Programming *Fall 2019, Fall 2020*

- Held office hours and labs for 200-student course covering structural induction and higher order functions

ACTIVITIES

Researcher, SDAIA Winter School *Dec 2024*

- Selected to attend the inaugural winter school on multimodal LLMs, designed as an extension to JSALT
- Decreased WER on ASR for codeswitching using Whisper prompted with in-context learning

Leader, Computational Historical Linguistics Subgroup *Jan 2023 - May 2023*

- Recruited and led team of 6 towards publication on phylogenetic inference (Chang *et al.* 2023)
- Mentored 3 freshmen who were new to machine learning, deep learning, NLP, and research

The Impact Fellowship, Impact Labs *Jan 2019*

- Selective (< 5%) two-week program to train software engineers working in tech for social good
- Connected with speakers and leaders from NGOs, social startups, and think tanks

Mentor, Glen A. Wilson High School CODE Team *2018 - present*

- Taught human-centered design, web dev (HTTP, API design) and data structures (big O, linked lists)
- Awarded one of two Leadership and Service Awards by Principal Dr. Danielle Kenfield
- Hosted Shark Tank to critique Congressional App Challenge ideas, emphasizing human-centered design
- Provided free college apps critiques, helping 2 high school students secure Amazon internships
- Encouraged students to find their interdisciplinary niche within CS (e.g. computational linguistics)
- Mentored twenty-five alumni across prestigious universities (e.g. Berkeley and Harvey Mudd)

TALKS

AI: A Gentle Introduction, Wilson Hacks, Glen A. Wilson CODE	<i>March 15, 2025</i>
Neural Reconstruction of Middle Chinese, CMU Language Technologies Institute	<i>May 3, 2023</i>
Computer Science After High School, Wilson Hacks, Glen A. Wilson CODE	<i>Apr 1, 2023</i>

SKILLS

Software Engineering	Python, Java, Ruby, Go, C, AWS, HTML/CSS, JS, Git
Machine Learning Tools	PyTorch, ESPnet, fairseq, transformers, SLURM
Languages	English (native), Mandarin Chinese (native), Spanish (California Bilingual Seal), Taiwanese Hokkien