

Chia-Hsuan Chang

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Research interest

Natural Language Processing, Health Informatics, Generative Artificial intelligence, Data Science, AI Bias and Fairness

Education

- 2016 – 2021 **National Sun Yat-Sen University** – Kaohsiung, Taiwan
PhD in Information Systems
Dissertation: [A Study on Text Analysis Across Languages](#)
Advisor: San-Yih Hwang. *GPA: 4.1/4.3*
- 2015 – 2016 **National Sun Yat-Sen University** – Kaohsiung, Taiwan
MBA in Information Systems
Advisor: San-Yih Hwang. *GPA: 4.1/4.3*
- 2011 – 2014 **National Sun Yat-Sen University** – Kaohsiung, Taiwan
BA in Information Systems
GPA: 3.75/4.3

Research experience

- Jun. 2023 – Present **Remote Research Volunteer**
Supervisor: Grace Lu-Yao (Thomas Jefferson University SKCC)
→ Using electronic health records to improve treatment options for patients who have prostate cancer and lung cancer
- Feb. 2023 – Present **Postdoctoral Researcher**
Mentor: Christopher C. Yang (Drexel University CCI)
→ Investigating potential applications of large language models in the healthcare domain
→ Studying fairness issue of predictive models deployed in healthcare service
- Oct. 2022 – Jan. 2023 **Postdoctoral Researcher**
Mentor: San-Yih Hwang (National Sun Yat-Sen University)
→ Developed a prompt method to detect adverse drug effects from social media
→ Proposed a topic identification algorithm for multilingual corpus using large language models

Feb. 2020 – **Visiting Ph.D. Student**

Feb. 2021 Mentor: Christopher C. Yang (Drexel University CCI)

→ Proposed algorithms to bridge the language gap in consumer health vocabulary and consumer health search

→ Developed topic identification methods to reveal topic trends from large scale COVID-19 tweets

Peer-reviewed publication

2024 Beyond Self-Consistency: Ensemble Reasoning Boosts Consistency and Accuracy of LLMs in Cancer Staging

Chang, C. H., Lucas, M. M., Lee, Y., Lu-Yao G., Yang, C. C.

International Conference on Artificial Intelligence in Medicine – Accepted

2024 Explainable AI for Fair Sepsis Mortality Predictive Model

Chang, C. H., Wang, X., Yang, C. C.

International Conference on Artificial Intelligence in Medicine – Accepted

2024 Classifying Cancer Stage with Open-Source Clinical Large Language Models

Chang, C. H., Lucas, M. M., Lu-Yao G., Yang, C. C.

IEEE International Conference on Healthcare Informatics – Accepted

2024 Constructing Cross-lingual Consumer Health Vocabulary with Word-Embedding from Comparable User Generated Content

Chang, C. H., Wang, L., Yang, C. C.

IEEE International Conference on Healthcare Informatics – Accepted

2024 An ExplainableFair Framework for Predictive Modeling in Healthcare

Lucas, M. M., Wang, X., **Chang, C. H.**, Yang, C. C.

IEEE International Conference on Healthcare Informatics – Accepted

2023 Examining Public Awareness of Ageist Terms on Twitter: Content Analysis

Schramm, E., Yang, C. C., **Chang, C. H.**, Mulhorn, K., Yoshinaga S., Huh-Yoo, J.

JMIR Aging (indexing: ESCI)

2023 Resampling for Mitigating Bias in Predictive Model for Substance Use Disorder Treatment Completion

Lucas, M. M., **Chang, C. H.**, Yang, C. C.

IEEE International Conference on Healthcare Informatics – Houston, USA

2023 Prompting for Few-shot Adverse Drug Reaction Recognition from Online Review

Chang, C. H., Chang, F. Y., Hwang, S. Y., and Yang, C. C.

IEEE International Conference on Healthcare Informatics – Houston, USA

- 2023 On Bridging Consumer Health Search Across Languages Using Cross-lingual Word Space
Chang, C. H., & Yang, C. C.
Electronic Commerce Research and Applications (indexing: SCIE, SSCI)
- 2021 Topics and Sentiments of Public Concerns Regarding Covid-19 Vaccines: Social Media Trend Analysis
Monselise, M., **Chang, C. H.**, Ferreira, G., Yang, R., & Yang, C. C.
Journal of Medical Internet Research (indexing: SCIE)
- 2021 A Word Embedding-based Approach to Cross-lingual Topic Modeling
Chang, C. H., & Hwang, S. Y.
Knowledge and Information Systems (indexing: SCIE)
- 2021 Learning Bilingual Sentiment Lexicon for Online Reviews
Chang, C. H., Hwang, S. Y., & Wu, M. L.
Electronic Commerce Research and Applications (indexing: SCIE, SSCI)
- 2021 What Are People Concerned About During the Pandemic? Detecting Evolving Topics about COVID-19 from Twitter
Chang, C. H., Monselise, M., & Yang, C. C.
Journal of Healthcare Informatics Research (indexing: ESCI)
- 2020 Employing Word Mover's Distance for Cross-lingual Plagiarized Text Detection
Chia-Ming Chang, **Chang, C. H.**, and Hwang, S. Y.
Annual Meeting of the Association for Information Science and Technology – Online
- 2019 An Approach to Cross-lingual Sentiment Lexicon Construction
Chang, C. H., Wu M. L., and Hwang, S. Y.
IEEE International Congress on Big Data (BigDataCongress) – Milan, Italy
- 2018 Incorporating Word Embedding into Cross-lingual Topic Modeling
Chang, C. H., Hsu, T. X., and Hwang, S. Y.
IEEE International Congress on Big Data (BigData Congress) – San Francisco, USA

Professional service

- 2023, 2024 **Reviewer.** IEEE Transactions on Knowledge and Data Engineering (TKDE)
- 2023, 2024 **Reviewer.** Knowledge and Information Systems (KAIS)
- 2023, 2024 **Reviewer.** Journal of Healthcare Informatics Research (JHIR)
- 2023 **Reviewer.** International Journal of Data Science and Analytics (JDSA)

Award and honor

- 2021 Exceptional Doctoral Dissertation (National Sun Yat-Sen University)

2021	Honorary Member (The Phi Tau Phi Scholastic Honor Society of the R.O.C.)
2020	Scholarship (Ministry of Science and Technology, Taiwan) <i>NT 900,000 for one year, Graduate Students Study Abroad Program</i>
2016 – 2020	Industry-Academy Cooperation Scholarship (Ministry of Education, Taiwan) <i>NT 1,200,000 for four years</i>
2016 – 2018	PhD Two-Year Scholarship (National Sun Yat-sen University) <i>NT 684,000 for two years</i>
2015 – 2016	Five-Year BA-MA Program Scholarship (National Sun Yat-sen University) <i>NT 120,000 for one year</i>

Teaching experience

Summer 2019 & Summer 2021	<p>Instructor, Fresh Undergraduate Training for Text Mining Research (NSYSU TAR Lab)</p> <p>→ Organized the curriculum for fresh undergraduates to get familiar with necessary mathematical skills for machine learning, including linear algebra, multivariate calculus, and optimization approach</p> <p>→ Guided the paper discussions on the developments of NLP, such as topic modeling, word embedding, and transformer</p>
Autumn 2017 & Autumn 2018	<p>Teaching assistant, MIS 532: Process Management in Service Computing (National Sun Yat-sen University)</p> <p>→ Taught students to implement microservices (SOAP/WSDL and RESTful API)</p> <p>→ Taught students to deploy microservices using docker and docker-compose</p>
Spring 2016 & Spring 2017	<p>Teaching assistant, MIS 205 & MIS 512: Database Management (National Sun Yat-sen University)</p> <p>→ Prepared the hand-on materials for helping students learn the CRUD operations in relation database (i.e., OracleDB) and document-oriented database (i.e., MongoDB)</p>
Summer 2016	<p>Instructor, Fresh Undergraduate Training for Text Mining Research (NSYSU TAR Lab)</p> <p>→ Organized the curriculum for fresh undergraduates to learn fundamental knowledge about conducting researches on text mining</p> <p>→ Taught introduction to clustering algorithms, MongoDB operations, and packages for performing NLP</p>

Technical skill

Programming languages

Python, R, Java, Bash, SQL, HTML/CSS/JS, \LaTeX

Software

Git, Linux, Docker,
Spacy, LangChain, HuggingFace Transformers, PyTorch, Keras,
MongoDB, Chroma DB, MySQL

Medical Language Processing

Universal Medical Language System (UMLS), ICD-10

Languages

Chinese (native), English (fluent)