Ming-Chang Chiu

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EDUCATION

University of Southern California (USC)   Los Angeles, CA
Ph.D. in Computer Science   Aug 2018 – Dec 2019, Aug 2020 – Sep 2024 (Exp.)
- Advisor: Prof. Xuezhe Ma
- Interests: Reliable & Responsible Generative AI, Data-centric AI, Healthcare Vision, Domain Generalization
- Invited to pitch at Y Combinator China for a $1M funding

University of Southern California (USC)   Los Angeles, CA
M.S. in Electrical Engineering   Aug 2016 – May 2018
- Advisor: Prof. Stefan Scherer

National Tsing Hua University (NTHU)   Hsinchu, Taiwan
B.S. in Computer Science & Electrical Engineering   Sep 2011 – Jun 2015
- Advisors: Prof. Min Sun and Jerry Chou
- Honorary Member of Phi Tau Phi Scholastic Society (**top 1%**)
- Foreign Exchange Scholarship: **$10k**

University of Minnesota   Twin Cities, MN
Exchange Student in Computer Science and Engineering   Fall 2014

Tsinghua University   Beijing, China
Summer Exchange Student in Computer Science   Summer 2012

PUBLICATIONS
- VideoPoet: A Large Language Model for Zero-Shot Video Generation, ArXiv, Blog, In ***ICML (Best Paper) 2024***
- Behavioral Bias of Vision-Language Models: A Behavioral Finance View. Y. Xiao*, Y. Lin, **M.-C. Chiu***, In ***ICML LLMs and Cognition 2024***. Link
- MegaCOIN: Medium Granularity Color Annotated Images Improve Instruction Tuning for Vision-Language Models. **M.-C. Chiu**, P.-Y. Chen, X. Ma, *In Preparation*.
- MultiCat: Does Visual Multiplicity Benefit Visual Recognition Generalization and Robustness? **M.-C. Chiu**, P. Xiang, P.-Y. Chen, X. Ma, *In Preparation*.
- DDI-CoCo: Understanding the Effect of Color Contrast in Machine-Assisted Skin Disease Detection. **M.-C. Chiu***, Y. Wang*, J.-J. Kuo, P.-Y. Chen, *In ICASSP 2024*. Link Long Ver. Submitted to ***Nature Machine Intelligence***.
- COLORSENSE: A Comparative Study on Color Vision of Machine Visual Recognition. **M.-C. Chiu**, Y. Wang, D.E. Kim, P.-Y. Chen, X. Ma. *Submitted to **NeurIPS** 2024*. Paper
- On Human Visual Contrast Sensitivity and Machine Vision Robustness: A Comparative Study. **M.-C. Chiu**, Y. Wang, D.E. Kim, P.-Y. Chen, X. Ma. arXiv
- Better May Not Be Fairer: A Study on Subgroup Discrepancy in Image Classification **M.-C. Chiu**, P.-Y. Chen, X. Ma. In ***ICCV 2023***. arXiv
- Robust Representation Learning for Group Shifts and Adversarial Examples. **M.-C. Chiu**, X. Ma. In ***NeurIPS 2022 ML Safety***. Link
- Screenplay Quality Assessment: Can We Predict Who Gets Nominated? **M.-C. Chiu**, Tiantian Feng, Xiang Ren, Shrikanth Narayanan. In ***ACL NUSE 2020***.
- Automated Empathy Detection for Oncology Encounters. Z. Chen, J. Gibson, **M.-C. Chiu**, Q. Hu, T. K. Knight, D. Meeker, J. A. Tulsky, K. I. Pollak and S. Narayanan. In *IEEE Int'l Conf. on Healthcare Information (ICHI) 2020*.
- A system for the 2019 Sentiment, Emotion and Cognitive State Task of DARPA's LORELEI project. V. Martinez, A. Ramakrishna, **M.-C. Chiu**, K. Singla, and S. Narayanan. In *Proceedings of the International Conference on Affective Computing & Intelligent Interaction (ACII 2019)*, September 2019. (**Oral**)

RELATED COURSEWORK	Online Optimization/Learning, ML Theory, Large Scale Optimization for Machine Learning, Convex Optimization, Advanced Representation Learning for NLP, Advanced Algorithms, Knowledge Extraction and Reasoning, Dialogue Systems, Affective Computing
SKILLS	Languages: **Python**, C/C++, MATLAB, Ocaml, Java, HTML/CSS, PHP, SQL, JavaScript Technologies & API: **PyTorch**, Pandas, Docker, Scikit Learn, Hadoop, Spark Transferrable: Strategic Thinking, Collaboration, Public Speaking

WORK EXPERIENCES

NVIDIA — Santa Clara, CA
Research Intern [Mentors: Andrew Tao, Karan Sapra, Guilin Liu]   May 2024 – Aug 2024
- Developing on GPT4V-like models.

Google Research — Mountain View / Los Angeles, CA
Student Researcher [Host: Rachel Hornung, Marco Andreetto, Benoit Corda]   Oct 2023 – Dec 2023
- Benchmarked and mitigated biases of text-to-video/text-to-image generative models (VideoPoet & Phenaki)
- Designed out-of-distribution detection safety measures for large vision-language models

Lawrence Livermore National Lab — Livermore, CA
Research Intern [Host: Bhavya Kailkhura, Pin-Yu Chen]   May 2023 – Aug 2023
- Designing instruction-tuning methods to defend jailbreaking attacks on Vision-Language Models (VLM) like GPT-4
- Evaluating new AirSim-generated context-aware benchmarks for zero-shot domain generalization of multi-modal models like CLIP, GLIP, GroundingDINO, etc.

Computer Science Department, USC — Los Angeles, CA
Head Teaching Assistant   Jan 2020 – Present
- Machine Learning, Data Mining & Applied Natural Language Processing

Lilt, Inc. — San Francisco, CA
Data Science Intern [Host: Geza Kovacs]   May 2020 – Sep 2020
- Collaborated with 5 senior engineers on improving a robust personalized machine translation (MT) system with 2 algorithms
- Developed a successful defense mechanism against noisy online inputs; 5 BLEU better than the baseline
- Presented a visualization analysis tool in front of 10 senior researchers

Signal Analysis and Interpretation Lab (SAIL), USC Link — Los Angeles, CA
Research Assistant   Aug 2018 – Dec 2019
- Designed domain-specific feature extraction and Neural Network architectures for narrative quality assessment
- Utilized statistical consistency measure for linguistic behavior
- Developed a pipeline for Sentiment, Emotion, Cognitive state task of DARPA LORELEI project

Institute for Creative Technologies — Los Angeles, CA
Researcher [Project: Conversation Quality Assessment]   Jan 2017 – Dec 2017
- Trained Long Short Term Memory (LSTM) deep learning model and word embeddings for behavioral modeling based on 10k Fisher and alcoholism treatment data
- Predicted new conversation and treatment session quality reaching 75% accuracy

Illumina, Inc. — San Diego, CA
DevOps Applications Intern   May 2017 – Aug 2017
- Built a machine learning Cron for analyzing jobs in the High-Performance Computing cluster to identify "destined to fail" jobs using Sci-kit learn, reaching 95% accuracy
- Developed a deep learning Daemon that constantly loads new samples from database (Hive) to train a classification model using Mini-batch update technique with TensorFlow, achieving 78% accuracy
- Maintained enterprise Atlassian Jira and Confluence for 7k employees

ACADEMIC EXPERIENCE	**Reviewer**, IEEE International Conference on Acoustics, Speech and Signal Processing 2022
OTHER ACTIVITIES	• President of Taiwanese PhD Student Association • California Collegiate Salsa Competition Champion 2018 • Vice President of String Ensemble
INVITED TALK	• CSRMP gStudent Experience Panel, Google's CS Research Mentorship Program, November 2023 • Google Perception Fairness Internal Talk, November 2023
HONORS & AWARDS	2023 Datumo AI Dataset Sponsorship Program (**$50k**) 2023 USC WiSE Travel Grant * 2 2022, 2023 Kaggle Silver Medal (top 4% out of 5,332 teams), Porto Seguro's Safe Driver Prediction 2017 Celebrating the Viterbi Algorithm Through Art 2017 Honorary Member of Phi Tau Phi Scholastic Society 2015 Excellent Study Group Award, NTHU 2015 National Tsing Hua University International Exchange Scholarship 2014