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 – Aug 2024 (Exp.)
- Advisor: Prof. Xuezhe Ma
- Interests: Domain Generalization, Reliable & Responsible AI, Healthcare Vision, Data Augmentation
- 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, *In Preparation*. Paper, Blog
- SpurSuite: A New Benchmark for Context-Aware Robustness. **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 **CVPR** 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

Google Research   Mountain View, CA
Student Researcher   Oct 2023 – Present
• Benchmarking and mitigating text-to-video/text-to-image generative models biases
• Developing 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

HONORS & AWARDS	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