Tzu-Ming Harry Hsu

徐子旻

Ph.D. in AI and Healthcare, MIT h@stmharry.io

Entrepreneur, Scholar, Writer, Speaker, and Diver *+1 617-803-7785 / +886 928-494-198*

- Entrepreneurial builder with experience leading cross-functional teams, scaling products from idea to launch, and turning research into practical impact.
- Researcher with peer-reviewed work spanning AI, medical imaging, and machine learning, with 3,684 Google Scholar citations.
- Taiwan-born, US-educated innovator seeking to elevate Taiwan's role as a global engineering powerhouse and promoting a culture of rapid iterative innovation.
- Ocean lover with an AIDA Instructor Certification and an SDI Open Water Scuba Diving Certification.

Education

Massachusetts Institute of Technology Jun 2020 – Jun 2022

Ph.D., Computer Science *Cambridge, MA*

- *Advisor*: Peter Szolovits
- *Research areas*: Computer vision, federated learning, machine learning for healthcare

Massachusetts Institute of Technology Sep 2017 – May 2020

S.M., Electrical Engineering and Computer Science *Cambridge, MA*

- *Advisors*: Peter Szolovits, Fadel Adib
- *Research areas*: Computer vision, machine learning, wireless signal, signal processing

National Taiwan University Sep 2011 – Jun 2016

B.S., Physics; B.S.E., Electrical Engineering *Taipei, Taiwan*

- *Class rank*: 1/190
- *GPA*: 3.99 / 4.00

Professional Experience

Dentscape Apr 2025 – Present

Machine Learning & Software Engineering Consultant *Taipei / Remote*

Led ML platform and production engineering upgrades that cut data access from ~3 days to minutes, reduced end-to-end labeling turnaround from ~4 weeks to ~1 week, improved core backend throughput by ~110%, and lowered infrastructure cost by ~50%.

- Reorganized a fragmented ~10 TB dental dataset into a standardized ~4 TB ML-ready registry, reducing raw-data access from ~3 days to minutes.
- Rebuilt labeling and pre-labeling workflows end-to-end, cutting 100-200 case batch turnaround from ~4 weeks to ~1 week with clear audit trails.
- Standardized devops/deployment with modern packaging, private registry support, and GitHub Actions; deploys moved from manual half-day ops to single-push workflows.
- Led infra migration from GPU-heavy services to CPU-compatible stack for CPU-bound workloads, reducing overall server costs by ~50%.
- Implemented bilevel/meta-learning framework for personal AI crown generation and improved preference fit by ~20%, contributing to higher user engagement.
- Optimized backend pipelines for SLO segmentation and crown generation, achieving ~110% aggregate throughput improvement.
- Introduced structured hiring and engineering standards; closed a senior leadership hire and supported award-related media visibility.

Clarq AI Dec 2024 – Present

Co-founder & CTO *Taipei / Remote*

Helped reposition Clarq from hardware product to force-intelligence platform with 100+ deployments, 15M+ force-time samples, and 150K labeled motion sets, while driving investor narrative and US-facing fundraising readiness.

- Co-led fundraising and positioning narrative around a three-layer strategy: hardware wedge, SaaS profit engine, and long-term data/model moat.
- Drove US-facing investor outreach and progressed pre-seed conversations toward near-commit stage with angels.
- Supported Startup Island Taiwan Silicon Valley program participation and international expansion narrative.
- Aligned product roadmap, data strategy, and investor-facing story across Taiwan hardware operations and US capital market expectations.

CodeGreen Labs PBC Sep 2023 – Nov 2024

Co-founder & CTO *Boston / Taipei*

Built decentralized software for climate-conscious investors and UN 2030-aligned initiatives, scaling to projected $1MM annual revenue with a 10-person team and major ecosystem partnerships.

- Reached projected annual revenue of $1MM USD by Q2 2024 with a 10-person team.
- Established partnerships with Microsoft, Global Blockchain Business Council, Gold Standard, SDG Data Alliance, and PVBLIC.
- Built a cross-functional team across climate, finance, and software to address complex data, auditability, and compliance challenges.
- Designed and shipped decentralized systems with end-to-end auditability, regulatory compliance, and interoperability with existing ecosystems.

Hashgreen Labs Sep 2022 – Aug 2023

Co-founder & CTO *Boston / Taipei*

Scaled Hashgreen from inception to a 20-person team, raised $1MM+ in capital, and delivered flagship green-blockchain and DeFi products for global clients.

- Raised over $1MM USD in capital and grew the team from 0 to 20 employees.
- Built hiring, onboarding, and performance review systems to support a high-performing engineering organization.
- Secured and delivered high-impact projects for clients including The World Bank and Chia Network.
- Led development of DeFi protocols (DEX and AMM), becoming the first team on the Chia blockchain to launch these primitives.

International Academia of Biomedical Innovation Technology 2021 – Present

Consultant & Convener *Taipei, Taiwan*

Supported a 50+ member biomedical innovation community through project mentorship, dental AI research collaboration, and large-scale technology outreach events.

- Helped grow a community of 50+ members while supporting 8+ academic projects and 15+ publications.
- Led a dental AI research team in collaboration with National Taiwan University Hospital.
- Co-organized demo events with 100+ participants to showcase biomedical technologies and educate the broader community.

Massachusetts Institute of Technology Sep 2018 – Jun 2022

Research Assistant *Cambridge, MA*

Produced 14 conference papers, 5 journal papers, and 1 U.S. patent across medical AI and computer vision, while collaborating with top research and healthcare partners to move models toward real-world clinical use.

- Published 14 conference articles, 5 journal articles, one U.S. patent, and two degree theses.
- Served as a peer reviewer for 8 conferences and journals, reviewing 34 articles.
- Received media coverage from CBS, Engadget, TechCrunch, and MIT News.
- Collaborated with Google, Takeda Pharmaceutical, and Beth Israel Deaconess Medical Center.

- Awarded scholarships totaling 4 years in duration.

WorldQuant Jun 2021 – Aug 2021
Data Science Intern *Taipei, Taiwan*

Improved an existing quantitative strategy by +1.5% market correlation through targeted modeling and optimization work.

Digital Drift Mar 2016 – Mar 2020
Lead Machine Learning Scientist *Taipei, Taiwan*

Built and deployed deep learning systems and backend APIs that moved computer vision features from experimentation into production mobile experiences.

- Built deep neural networks for cuisine recognition and matching using TensorFlow on multi-GPU machines.
- Designed and maintained backend APIs to serve model predictions in production settings.

Google Jun 2020 – Sep 2020
Software Engineer Intern *Remote*

Contributed production software and experimentation tooling that improved reliability and iteration speed for applied machine learning workflows.

Google Jun 2019 – Mar 2020
Student Researcher *Seattle, WA / Cambridge, MA*

Built large-scale ML experimentation infrastructure spanning 1,000+ GPUs and 1M+ machine hours, and published 2 peer-reviewed papers in deep federated learning with open-source outputs for broader adoption.

- Conducted foundational research in deep federated learning, contributing to early growth of the field.
- Published 2 peer-reviewed papers and presented findings at top conferences and workshops.
- Developed a scalable experimentation library running on thousands of machines and 1,000+ GPUs (over 1M machine hours).
- Open-sourced research code and datasets for broader community use.

Brigham and Women's Hospital Mar 2019 – Feb 2020
Research Trainee *Boston, MA*

Beth Israel Deaconess Medical Center Nov 2019 – Oct 2020
Research Trainee *Boston, MA*

Published impactful clinical AI research and deployed a PACS-integrated screening workflow across 1,000+ patients while managing shared deep-learning compute for a 10+ member research unit.

- Published three impactful research articles on critical medical topics, including liver tumor assessment, COVID-19 clinical risk prediction, and automatic pancreatic cancer assessment.
- Developed and implemented an AI-driven patient screening pipeline in the hospital's PACS workflow, screening over 1,000 patients and improving disease diagnosis accuracy.
- Managed the computation resources for a research unit of 10+ members, streamlining deep learning processes and maximizing resource sharing.

Academia Sinica Feb 2014 – May 2016
Student Researcher *Taipei City, Taiwan*

Researched heterogeneous, unsupervised, and semi-supervised domain adaptation for visual classification and published three peer-reviewed papers presented at top conferences and workshops.

- Researched heterogeneous, unsupervised, and semi-supervised domain adaptation for visual classification.
- Published 3 peer-reviewed academic papers and presented findings at top conferences and workshops.

Olympiad Tutoring Community Sep 2011 – Jun 2015
Private Tutor *Taipei, Taiwan*

Mentored advanced physics students from fundamentals through competition-level performance, including pathways to Taiwan's national Olympiad representation.

- Mentored students who became Taiwan national representatives in the International Physics Olympiad (IPhO).

Leadership Experiences

Federation of Taiwanese Student Associations in New England (FTSANE) 2019 – 2020
Activities Officer *Boston, MA*

MIT Taiwanese Student Association 2018 – 2019
President *Boston, MA*

- Led coordination of 20+ events for a diverse community of over 100 members.
- Organized 10+ career workshops and helped plan 10+ national holiday celebrations.

Awards & Honors

Departmental Valedictorian (First Place at Graduation) 2016
Department of Electrical Engineering, National Taiwan University *Taipei, Taiwan*

- Placed 1st among 200 classmates across all courses.

Silver Medal 2015
Altera Innovate Asia FPGA Design Competition *Taipei, Taiwan*

- Placed 2nd among 20 international teams.
- Designed a product named EZBud with integrated algorithms that modulate music based on user sporting statistics.

Gold Medal / Overall Winner 2011
42nd International Physics Olympiad (IPhO) *Bangkok, Thailand*

- Represented Taiwan and placed 1st in theory, experiment, and combined rankings among 400+ participants from 80+ countries.

Gold Medal / Experiment Winner 2011
12th Asian Physics Olympiad (APhO) *Tel Aviv, Israel*

- Placed 1st in the experiment section among 100+ participants.

Gold Medal 2010
41st International Physics Olympiad (IPhO) *Zagreb, Croatia*

Gold Medal / Experiment Winner 2010
11th Asian Physics Olympiad (APhO) *Taipei, Taiwan*

- Placed 1st in the experiment section among 100+ participants.

Gold Medal 2008
5th International Junior Science Olympiad (IJSO) *Changwon, Korea*

Artificial Intelligence to Assess Dental Findings from Panoramic Radiographs–A Multinational Study 2025
arXiv *Cited by 8*

Yin-Chih Chelsea Wang, Tsao-Lun Chen, Shankeeth Vinayahalingam, Tai-Hsien Wu, Chu Wei Chang, Hsuan Hao Chang, Hung-Jen Wei, Mu-Hsiung Chen, Ching-Chang Ko, David Anssari Moin, Bram van Ginneken, Tong Xi, Hsiao-Cheng Tsai, Min-Huey Chen, **Tzu-Ming Harry Hsu**, Hye Chou

Performance Frontier in Freediving: An Exploratory Analysis 2026
AIDA Instructor Thesis

TMH Hsu, J Chang

Intra-Oral Scan Segmentation Using Deep Learning 2023
BMC Oral Health *Cited by 42*

Shankeeth Vinayahalingam, Steven Kempers, Julian Schoep, **Tzu-Ming Harry Hsu**, David Anssari Moin, Bram van Ginneken, Tabea Flugge, Marcel Hanisch, Tong Xi

Positional Assessment of Lower Third Molar and Mandibular Canal Using Explainable Artificial Intelligence 2023
Journal of Dentistry *Cited by 29*

Steven Kempers, Pieter van Lierop, **Tzu-Ming Harry Hsu**, David Anssari Moin, Stefaan Berge, Hossein Ghaeminia, Tong Xi, Shankeeth Vinayahalingam

Emulating Clinical Diagnostic Reasoning for Jaw Cysts with Machine Learning 2022
Diagnostics *Cited by 22*

Balazs Feher, Ulrike Kuchler, Falk Schwendicke, Lisa Schneider, Jose Eduardo Cejudo Grano de Oro, Tong Xi, Shankeeth Vinayahalingam, **Tzu-Ming Harry Hsu**, Janet Brinz, Akhilanand Chaurasia

Methods and Apparatus for Radio Frequency Sensing in Diverse Environments 2022
US Patent 11,308,291 *Cited by 16*

Unsoo Ha, Junshan Leng, Alaa Khaddaj, Yunfei Ma, **Tzu Ming Hsu**, Zexuan Zhong, Fadel Adib

Effective Modeling in Medical Imaging with Constrained Data 2022
PhD Thesis, Massachusetts Institute of Technology

Tzu-Ming Harry Hsu

Artificial Intelligence to Assess Body Composition on Routine Abdominal CT Scans and Predict Mortality in Pancreatic Cancer – A Recipe for Your Local Application 2021
European Journal of Radiology *Cited by 57*

Tzu-Ming Harry Hsu, Khoschy Schawkat, Seth J Berkowitz, Jesse L Wei, Alina Makoyeva, Kaila Legare, Corinne DeCicco, S Nicolas Paez, Jim SH Wu, Peter Szolovits

Visceral Adiposity and Severe COVID-19 Disease: Application of an Artificial Intelligence Algorithm to Improve Clinical Risk Prediction 2021
Open Forum Infectious Diseases *Cited by 23*

Alexander Goehler, **Tzu-Ming Harry Hsu**, Jacqueline A Seiglie, Mark J Siedner, Janet Lo, Virginia Triant, John Hsu, Andrea Foulkes, Ingrid Bassett, Ramin Khorasani, Deborah J Wexler, Peter Szolovits, James B Meigs, Jennifer Manne-Goehler

Adversarial Contrastive Pre-Training for Protein Sequences 2021
arXiv Preprint arXiv:2102.00466 *Cited by 9*

Matthew McDermott, Brendan Yap, **Harry Hsu**, Di Jin, Peter Szolovits

DeepOPG: Improving Orthopantomogram Finding Summarization with Weak Supervision 2021
Medical Image Computing and Computer Assisted Intervention (MICCAI 2021) *Cited by 8*
Tzu-Ming Harry Hsu, Yin-Chih Chelsea Wang

Methods and Apparatus for Radio Frequency Sensing in Diverse Environments 2020
US Patent 10,872,209 *Cited by 16*
Unsoo Ha, Junshan Leng, Alaa Khaddaj, Yunfei Ma, **Tzu Ming Hsu**, Zexuan Zhong, Fadel Adib

Three-Dimensional Neural Network to Automatically Assess Liver Tumor Burden Change on Consecutive Liver MRIs 2020
Journal of the American College of Radiology *Cited by 23*
Alexander Goehler, **Tzu-Ming Harry Hsu**, Ronilda Lacson, Isha Gujrathi, Raein Hashemi, Grzegorz Chlebus, Peter Szolovits, Ramin Khorasani

Chexpert++: Approximating the Chexpert Labeler for Speed, Differentiability, and Probabilistic Output 2020
Machine Learning for Healthcare Conference (MLHC 2020) *Cited by 45*
Matthew BA McDermott, **Tzu Ming Harry Hsu**, Wei-Hung Weng, Marzyeh Ghassemi, Peter Szolovits

Automatic Longitudinal Assessment of Tumor Responses 2020
PhD Thesis, Massachusetts Institute of Technology *Cited by 3*
Tzu-Ming Harry Hsu

Baselines for Chest X-Ray Report Generation 2020
Machine Learning for Health (ML4H) Workshop, NeurIPS 2020 *Cited by 94*
William Boag, **Tzu-Ming Harry Hsu**, Matthew McDermott, Gabriela Berner, Emily Alesentzer, Peter Szolovits

Federated Visual Classification with Real-World Data Distribution 2020
European Conference on Computer Vision (ECCV 2020) *Cited by 275*
Tzu-Ming Harry Hsu, Hang Qi, Matthew Brown

Measuring the Effects of Non-Identical Data Distribution for Federated Visual Classification 2019
arXiv Preprint arXiv:1909.06335 *Cited by 1972*
Tzu-Ming Harry Hsu, Hang Qi, Matthew Brown

Transfer Neural Trees: Semi-Supervised Heterogeneous Domain Adaptation and Beyond 2019
IEEE Transactions on Image Processing *Cited by 21*
Wei-Yu Chen, **Tzu-Ming Harry Hsu**, Yao-Hung Hubert Tsai, Ming-Syan Chen, Yu-Chiang Frank Wang

Clinically Accurate Chest X-Ray Report Generation 2019
Machine Learning for Healthcare Conference (MLHC 2019) *Cited by 398*
Guanxiong Liu, **Tzu-Ming Harry Hsu**, Matthew McDermott, Willie Boag, Wei-Hung Weng, Peter Szolovits, Marzyeh Ghassemi

Unsupervised Multimodal Representation Learning Across Medical Images and Reports 2018
Machine Learning for Health (ML4H) Workshop, NeurIPS 2018 *Cited by 51*
Tzu-Ming Harry Hsu, Wei-Hung Weng, Willie Boag, Matthew McDermott, Peter Szolovits

Learning Food Quality and Safety from Wireless Stickers 2018
Proceedings of the 17th ACM Workshop on Hot Topics in Networks (HotNets 2018) *Cited by 95*
Unsoo Ha, Yunfei Ma, Zexuan Zhong, **Tzu-Ming Hsu**, Fadel Adib

3D-Aware Scene Manipulation via Inverse Graphics 2018
Advances in Neural Information Processing Systems (NeurIPS 2018) *Cited by 321*

Shunyu Yao, **Tzu Ming Hsu**, Jun-Yan Zhu, Jiajun Wu, Antonio Torralba, Bill Freeman, Josh Tenenbaum

Transfer Neural Trees for Heterogeneous Domain Adaptation 2016
European Conference on Computer Vision (ECCV 2016) *Cited by 80*

Wei-Yu Chen, **Tzu-Ming Harry Hsu**, Yao-Hung Hubert Tsai, Yu-Chiang Frank Wang, Ming-Syan Chen

Connecting the Dots Without Clues: Unsupervised Domain Adaptation for Cross-Domain Visual Classification 2015
International Conference on Image Processing (ICIP 2015) *Cited by 2*

Wei-Yu Chen, **Tzu-Ming Harry Hsu**, Cheng-An Hou, Yi-Ren Yeh, Yu-Chiang Frank Wang

Unsupervised Domain Adaptation with Imbalanced Cross-Domain Data 2015
International Conference on Computer Vision (ICCV 2015) *Cited by 90*

Tzu Ming Harry Hsu, Wei Yu Chen, Cheng-An Hou, Yao-Hung Hubert Tsai, Yi-Ren Yeh, Yu-Chiang Frank Wang