Ya-Wen (Yama) Chang

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I am a PhD researcher developing AI-driven systems for real-time mental health support, with a focus on agentic LLM systems, just-in-time adaptive interventions (JITAIs), and multimodal behavioral sensing. My interdisciplinary background in clinical psychology, computational methods, and data science shapes how I design technology-guided mental health systems.

Technical Skills

Languages	Python (primary), R, JavaScript, SQL
ML & AI	TensorFlow/Keras, Scikit-learn, LLM prompt engineering, vLLM, multi-agent systems, time-series modeling
Health & Sensing	EEG/IMU signal processing, multimodal sensing pipelines (GPS, accelerometer, screen), BLE wearable interfacing, spectral analysis
Tools & Infra	Git/GitHub, multi-GPU serving, async processing, Jupyter, Chart.js, Leaflet.js

Technical Projects

Dartmouth College • Center for Technology and Behavioral Health • github.com/yamachang

Neuro-Symbolic Sensor-to-Intervention Pipeline — *Evergreen JITAI*

End-to-end system converting raw multimodal smartphone sensors into behavioral tokens, constructing 24-hour context windows for an LLM-based decision engine selecting from 210 intervention dialogues across 10 wellness topics. Symbolic gating layer enables controlled experiments on LLM self-regulation of dosing. Scaled to **287K+ decision windows across 49 users** on a 3-GPU vLLM cluster at 88–100% utilization.

LLM Decision Engine Evaluation — *Evergreen JITAI*

Designed an evaluation framework for assessing LLM-based JITAI decision reliability across 287K aligned decision-window pairs and 49 users, with multi-level agreement metrics and permutation baselines. Demonstrated **topic agreement 71%**, personalization cosine similarity **0.905**, and agreement **31σ above chance**. Built a 6-dimension automated evaluation suite.

NeuroZen: Real-Time Closed-Loop EEG Meditation System — *IRB-Approved*

Streams real-time EEG (4ch, 125 Hz) and IMU from a FRENZ Brainband via Bluetooth; extracts an 82-feature vector every 2s for online LSTM classification (rest/light/deep meditation) with **latency under 520 ms**. Predictions drive adaptive binaural beat feedback. IRB-approved 6-session crossover protocol with live web dashboard.

Work Experience

PhD Researcher | *Dartmouth College, AIM HIGH Lab* — Sep. 2024 – Present

LLM-based multi-agent pipelines for just-in-time adaptive interventions using multimodal behavioral sensing and conversational AI

Data Scientist | *Northwestern University, Lab for Scalable Mental Health* — Sep. 2022 – Aug. 2024

ML models and statistical analyses on large-scale digital health datasets (600K+ records); county-level structural stigma index

Senior Research / Data Analyst | *University of Pittsburgh School of Medicine* — Sep. 2020 – Aug. 2022

End-to-end research with classification models in R; automated reporting that reduced study enrollment gender gap to 8%

Research Intern | *Columbia University Irving Medical Center* — Sep. 2018 – Mar. 2020

Independent mixed-methods research on LGBTQ+ mental health; first-authored publication and qualitative analysis

Education

Ph.D., Quantitative Biomedical Science — Dartmouth College, Geisel School of Medicine — 2024 –

M.A., Clinical Psychology (Quantitative Methods track) — Columbia University, GPA: 4.0/4.0 — 2018 – 2020

B.A., Economics — National Taiwan University — 2008 – 2012

Selected Publications

Chang, Y., Han, H.J., Griffin, T.Z., et al. (In Prep). Reliability of an agentic LLM JITAI engine for evidence-based interventions from passive sensing.

Chang, Y., Heinz, M.V., Griffin, T.Z., et al. (In Prep). The digital balance: A multilevel vector autoregressive analysis of online and in-person social behavior in major depressive disorder.

Chang, Y., Sotomayor, I., Szkody, E., Fox, K., & Schleider, J. (2025). Effectiveness of an online single-session minority stress intervention. *SSM–Mental Health*, 100409.