Kevin M. Tan

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Research scientist with 13 years' experience applying machine learning, computational modeling, and signal processing to noisy multimodal datasets. Adept at creative problem-solving in team environments.

EDUCATION

Ph.D., Social and Affective Neuroscience | University of California, Los Angeles 2018 – Present
B.S., Cognitive Neuroscience | Carnegie Mellon University 2010 – 2014

TECHNICAL SKILLS

- **Machine learning:** cognitive modeling, NLP, computer vision, deep learning, supervised learning, LM/GLM
- **Signal processing:** source localization, denoising, decomposition, wavelet analyses, causal modeling
- **Data modalities:** ECoG, LFP, fMRI, EEG, MEG, NIRS, pharmacology, face tracking, text, images, video
- **Programming:** Matlab, Julia, R, Python, CUDA, C/C++; hardware acceleration/optimization (x86/GPU)

EXPERIENCE

Doctoral Research Fellow | Social Cognitive Neuroscience Lab, UCLA 2016 – Present

Neurocognitive pathways of the social brain

- Conceptualized and executed several large multimodal investigations using ECoG, EEG, and fMRI ($N > 200$)
- Used large-language and deep learning models (e.g., BERT, AlexNet) to extract visual/affective/semantic features from social stimuli (text, photos)
- Assessed neural encoding of model features across time (e.g., representational similarity) to reveal the spatiotemporal functional progression of visual/affective/semantic computations during social inference
- Performed autoregressive causal modeling to chart feedforward and recurrent neural computations
- Disseminated findings in top journals (e.g., *Nature Comms.*) and media spotlights (e.g., *Psychology Today*)

Prediction and manipulation of transient social biases

- Predicted social/affective/semantic judgements of ambiguous stimuli (e.g., photos of social interactions) from spontaneous neural activity preceding each stimulus (Bayesian hierarchical modeling)
- Implemented decoded neurofeedback to manipulate trustworthiness judgments of ambiguous faces
- Resulted in a prestigious fellowship from the National Science Foundation ($138,000)

External Collaborator | Behavioral Cognitive Neuroscience Lab, Stanford University 2018 – Present

- Lead developer of ElectroCUDA, a GPU-based electrophysiology package with sophisticated denoising, robust statistics, and numerous machine learning tools (github.com/kevmtan/electroCUDA)

Staff Researcher | TarrLab, Carnegie Mellon University 2014 – 2016

- Engineered a signal processing and source localization pipeline for EEG/MEG using artifact subspace reconstruction, ICA, and beamforming (github.com/kevmtan/EEG-ICA-pipeline)

Research Assistant | Program in Cognitive Affective Neuroscience, U. of Pittsburgh 2011 – 2014

- Predicted rumination in major depression before and after psychotherapy or antidepressants using fMRI resting-state functional connectivity of the default network

Research Assistant | Addiction Neuropsychopharmacology Lab, U. of Minnesota 2010