Kousha Changizi

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Education

University of California, Irvine, Irvine, CA, USA
September 2022 - June 2027 (expected)

PhD in Machine Learning (ML)
Advisor: Pierre Baldi

Master of Computer Science; GPA: 3.92

University of California, San Diego, San Diego, CA, USA
September 2018 - June 2021

Bachelor of Science in Computer Science, Cognitive Science Minor

GPA: 3.84 (Cum Laude)

- Major: Computer Science, Minor: Cognitive Science

Research Interests

Machine Learning (ML), Deep Learning, Computer Vision, Statistical Modeling, AI for Scientific Data, Bioinformatics, Genomics, Multimodal Data Integration

Core Skills

Python, C++; PyTorch, TensorFlow, Transformers, scikit-learn;
Image/Video Segmentation (CVAT, SAM); Data Analysis (Pandas, NumPy, Scanpy);
Bioinformatics & Genomics (RNA-seq, Single-cell, Proteomics); CUDA, AWS, Docker

Representative Works

1. *BioCycle: Deep Learning Approaches for Circadian Rhythm* **(In Progress)**
   Kousha Changizi, et al.
2. *Deep Generative Models for Multispectral Fluorescence Imaging* **(In Progress)**
   Kousha Changizi, et al.
3. *Deep Learning-Based Segmentation of Melanoma in SOX10 and PRAME-Stained Histological Images* **(In Progress)**
   Kousha Changizi, et al.
4. *Circadian Dynamics in the Mouse Brain Cilia Transcriptome in Diverse Physiopathological States* **(BMC, 2024)**
   Kiki Chen, **Kousha Changizi**, et al.
5. *Time Restricted Feeding Mitigates High-Fat-Diet Induced Sleep Disruption and Amplifies NREM Substates* **(Submitted to SLEEP)**
   Michael Lam, Koorosh Askari, **Kousha Changizi**, et al.
6. *Maternal Circadian Rhythms during Pregnancy Dictate Metabolic Plasticity in Offspring* **(Cell, 2024)**
   Na Yao, **Kousha Changizi (4th author)**, et al.
7. *Circadian reprogramming by timed sodium intake reveals transcriptional pathways of daily salt handling in the colon* **(Submitted to Science Advances)**
   Takuto Torimitsu, Kenichiro Kinouchi, **Kousha Changizi (3rd author)**, et al.
8. *Chronic intermittent hypoxia imposes a new circadian metabolic architecture in a model of sleep apnea* **(Submitted to Science Advances)**
   Jonathan Gaucher, **Kousha Changizi (5th author)**, et al.

9. *CREST bidirectionally regulates memory processes in the adult hippocampus via a CBP-binding domain phosphorylation-dependent mechanism* **(Submitted to Cell)**
Franklin Garcia, **Kousha Changizi (5th author)**, et al.

10. *Succinate Modulation as a Novel Mechanism Underlying the Effects of Intermittent Fasting on Brain Function and Metabolism in Diet-Induced Obesity* **(Submitted to Interdisciplinary Medicine)**
Andrea Tognozzi, **Kousha Changizi (8th author)**, et al.

11. *Exploring the role of circadian rhythms in CDKL5 deficiency disorder* **(Poster Abstract, Society for Neuroscience)**
Maria Grazia Giuliano, Andrea Tognozzi, **Kousha Changizi**, et al.

Working Experience

- Machine Learning Engineer, Salk Institute of Biological Sciences – MyCircadianClock (MCC) Mobile App, San Diego, CA - June 2021 - June 2022
  - Developed a deep neural network to identify risks of diseases, including diabetes and obesity, based on users' health, diet, and activity data using PyTorch and TensorFlow.
  - Managed data from over 1 million users for the MCC health app on AWS, performing data preprocessing, mining, and visualization to generate insights for partners.
- Machine Learning Engineer Intern, Salk Institute of Biological Sciences, San Diego, CA - September 2020 - June 2021
  - Analyzed EEG and EMG signals from mice to examine sleep patterns, using PyTorch to develop algorithms with deep neural networks and Computer Vision techniques to classify Wake, REM sleep, and NREM sleep states.
  - Designed a self-supervised learning model to segment NREM sleep into six unique clusters based on EEG signals.
- Software Engineer Intern, Red Cross Emergency Response Team, San Diego, CA - January 2019 - June 2019
  - Developed an Android app with a team of 8, now used by Red Cross ambulances to improve response times in Tijuana.
  - Extracted and managed data (e.g., location and response times) using Python to build a model to reduce emergency response times.

Honors and Awards

- **Bronze Medal, Iran's National Computer Olympiad**, Tehran 2015. National high school competition in problem solving, algorithms, and programming.
- **Beall & Butterworth International Collaboration Winner**, UC Irvine 2023. Entrepreneurship competition winner; team represented at South Summit Brazil 2024.
- **1st Place, Big Ideas Contest (Global Health)**, UC Berkeley 2019. Developed Cruz Roja ambulance dispatching system; covered by NBC San Diego.
- **Provost Honors (x5)**, UC San Diego 2018–2021. Awarded in recognition of academic excellence during undergraduate studies.
- **Town & Gown Scholarship**, UC San Diego 2019. Recognized for community service and volunteer work.
- **De Anza College Honors Program**, Cupertino, CA 2018. Completed selective program with five independent research projects.