

SALAR ABBASPOURAZAD

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EDUCATION

PhD, Electrical & Computer Engineering, University of Southern California, Los Angeles *2015 - 2022*
Thesis: Dynamical representation learning for multiscale brain activity
MSc, Computer Science, University of Southern California, Los Angeles *2018 - 2020*
GPA: 3.97/4.00
BSc, Electrical Engineering, Sharif University of Technology, Tehran, Iran *2010 - 2015*
GPA: 18.92/20 (class of 2015 top 3 students)
Minor in Economics
High School Diploma in Physics & Mathematics, Energy High School, Tehran, Iran *2006 - 2010*
GPA: 19.98/20 (class of 2010 top student)

HONORS AND ACHIEVEMENTS

Ranked **2nd** among more than 270,000 competitors in the nationwide BSc exam, Iran *2010*

RESEARCH INTERESTS

Statistical Machine Learning, Representation Learning, Unsupervised/Self-supervised Learning, Time-series Dynamics

WORK EXPERIENCE

Apple Inc., Machine Learning Scientist *Sep 2022 - Present*
Responsibilities include prototyping and building data pipelines and machine learning tools for large data sets from wearable devices. This effort supports research-based investigation of a broad range of hypotheses regarding personal physiology and population-level health trends.

Apple Inc., Machine Learning Intern *May 2021-Aug 2021*
Develop contrastive self-supervised deep learning models for signals recorded from wearable devices

Neural Systems Engineering and Information Processing Lab, Research Assistant *Aug 2015 - Sep 2022*
University of Southern California. Advisor: Professor Maryam M Shanechi (<http://nseip.usc.edu>)
Develop deep learning and statistical machine learning algorithms to infer low-dimensional representations of high-dimensional time-series, in order to study brain activity and improve brain-machine interfaces.

PUBLICATIONS

Journal papers

H. Abbaspourazad*, E. Erturk*, B. Pesaran and M. Shanechi, "Dynamical flexible inference of nonlinear latent structures in neural population activity", *Nature Biomedical Engineering*, 2023 (in press)

H. Abbaspourazad, M. Choudhury, Y. Wong, B. Pesaran and M. Shanechi, "Multiscale low-dimensional motor cortical state dynamics predict naturalistic reach-and-grasp behavior", *Nature Communications*, 2021 (link)(USC story)

O. G. Sani, **H. Abbaspourazad**, Y. Wong, B. Pesaran and M. Shanechi, "Modeling behaviorally relevant neural dynamics enabled by preferential subspace identification", *Nature Neuroscience*, 2020 (link)(USC story)

H. Abbaspourazad, H. L. Hsieh and M. Shanechi, "A Multiscale dynamical modeling and identification framework for spike-field activity", *IEEE Trans. Neural Syst. Rehabil. Eng.*, 2019 (link)

Conference papers

H. Abbaspourazad, Y. Wong, B. Pesaran, M. Shanechi, "Identifying multiscale hidden states to decode behavior", *IEEE Engineering in Medicine and Biology Society*, 2018 (selected for oral presentation)

H. Abbaspourazad, H. L. Hsieh, M. Shanechi, "Multiscale modeling of dependencies between spikes and

fields”, *Asilomar Conference on Signals, Systems, and Computers*, 2017 (selected for oral presentation)
H. Abbaspourazad and M. Shanechi, ”An unsupervised learning algorithm for multiscale neural activity”,
IEEE Engineering in Medicine and Biology Society, 2017 (selected for oral presentation)

TEACHING EXPERIENCE

Head Teaching Assistant, Probability and Statistics	Fall 2014
Teaching Assistant and Assignment Designer, Principles of Electrical Engineering	Fall 2014
Teaching Assistant and Assignment Designer, Principles of Economics	Spring 2013
Head Teaching Assistant, Signals and Systems	Spring 2012
Labratory Assistant, Analog Circuits	Spring 2012
Labratory Assistant, Logic Circuits and Digital Systems	Spring 2012
Head Teaching Assistant, Electrical Circuit Theory	Fall 2012

TECHNICAL STRENGTHS

Modeling and Analysis	Deep Learning, Statistical Machine Learning, Signal Processing
Software & Tools	Python, PyTorch, Tensorflow, Spark, SQL, Matlab, C++, HTML

SELECTED GRADUATE COURSES

Representation Learning, Deep Learning, Artificial Intelligence, Analysis of Algorithms, Probabilistic Machine Learning, Estimation Theory, Game Theory, Natural Language Processing, Database Systems

SERVICE

Reviewed multiple papers for IEEE TII, IEEE EMBC, IEEE NER, IEEE Access and IEEE CJECE

INTERESTS

Soccer (former USC Futsal team member), HIIT exercises, Movies, Video games