Homa Rashidisabet

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🔁 May 2022

EDUCATION	**University of Illinois at Chicago (UIC), Chicago, IL** — Fall 2018 - (Expected) Fall 2023

Ph.D. in:	Biongineering
Areas of research:	Artificial Intelligence (AI) in Healthcare

University of Tehran (UT), Tehran, Iran — Fall 2012 - Fall 2016

B.Sc. in:	Applied Mathematics
Thesis:	Machine Learning in Neuroscience

WORK EXPERIENCE

— Working as Research Assistant at **Artificial Intelligence In Ophthalmology Center**, University of Illinois at Chicago. *Feb 2021 - Present*

— Worked as Research Assistant at **BiAffect**, a university startup company, University of Illinois at Chicago. *Jan 2019 - Jan 2021*

— Worked as R&D Data Science intern at **Johnson and Johnson (JnJ)** company in healthcare Artificial intelligence (AI) team. *May 2020 - Sep 2020*

— Worked as Teaching Assistant (TA) at Bioengineering Department, University of Illinois at Chicago. *Spring 2019- 2021*

— Worked as TA at Deparment of Mathematics, Statistics, and Computer Science, University of Tehran. *Fall 2015*

RESEARCH INTEREST

— Using AI for computer-aided diagnosis in Bioengineering, Ophthalmology, and Radiology.

— Using AI to predict abnormalities in biomedical images, and biomedical timeseries signals.

— Using AI for quantitative image biomarker development.

PUBLICATION

Peer-reviewed journal papers

— **Rashidisabet, H**., Ajilore, O., Leow, A., and Demos, A. Revisiting power-law estimation with applications to real-world human typing dynamics. Physica A: Statistical Mechanics and its Applications Journal.**Link** *April 2022*

— **Rashidisabet, H**., Thomas, P., Ajilore, O., Zulueta, J., Moore, R., Leow, A. A Systems biology approach to the digital behaviorome., A. Current Opinion in Systems Biology. **Link**. *Summer 2020*

— Vesel, C., **Rashidisabet, H**., [and 16 others, including Leow, A.]. Effects of mood and aging on keystroke dynamics metadata and their diurnal patterns in a large open-science sample: A BiAffect iOS study, Journal of the American Medical Informatics Association. **Link**. *Spring 2020*

Under-review journal papers

— **Rashidisabet, H**., Sethi, A., Jindarak, B., Edmonds, D., Chan, P., Vajaranant, T., Yi, D.. Toward generalizability in the deployment of Artificial Intelligence in Ophthalmology, Under review in Ophthalmology Science Journal. *Since April 2022*

— Sethi, A., **Rashidisabet, H**., Romond, K., Mojab, N., Kravets, S., Vajaranant, TS., Hallak, J. Explanatory and Predictive Modeling for Visual Field Progression in Primary Open Angle Glaucoma Patients, Under review in Survey of Ophthalmology Journal. *Since March 2022*

— Vairavan, S., **Rashidisabet, H**., Ness, S., Trivedi, M., Drevets, WC., Morrison, RL., Narayan, VA. Personalized Relapse Prediction in Patients with Major Depressive Disorder using Digital Biomarkers, Under review in NPJ Digital Medicine - Nature Journal. (*In collaboration with JnJ*.) *Since March 2022*

Published conference abstracts

— **Rashidisabet, H**., Chan, P., Vajaranant, T., Yi, D. Real-World Data Generalization for Glaucoma Prediction. The Association for Research in Vision and Ophthalmology (ARVO); 2022. **Link**

— **Rashidisabet, H**., [and 16 others, including Leow, A.]. Characterizing Passively Collected Real-World Keyboard Dynamics in Mood Disorders as a Function of Age and Time-of-Day. Biological Psychiatry 87.9 (2020): S150. Society of Biological Psychiatry (SOBP); 2020. **Link**

— Vesel, C., **Rashidisabet, H**., [and 16 others, including Leow, A.]. Diurnal Patterns as Evidenced by Over Eleven Million Smartphone Keystrokes During Daily Usage: An iOS BiAffect Study. Annual National Network of Depression Centers Conference; 2019 Sept 24-25; Ann Arbor, MI. **Link**.

— Vesel, C., **Rashidisabet, H**., [and 16 others, including Leow, A.]. Diurnal Patterns as Evidenced by over Eleven Million Smartphone Keystrokes During Daily Usage: An iOS BiAffect Study. ACNP 58th Annual Meeting: Poster Session II. Neuropsychopharmacol. 44, 230–384 (2019). **Link**

SERVICE

— Reviewer for NewInML @ NeurIPS 2020 workshop. **Link**. *Sep 2020 - Sep 2021*

— Reviewer for NewInML @ NeurIPS 2021 workshop. **Link**. *Sep 2021 - Present*

— Reviewer for NewInML @ ICML 2022 workshop. *Starting May 2022*

— Reviewer for Medical Physics Journal. *Jan 2022 - Present*

RESEARCH EXPERIENCE	**Biomedical Computer Vision (BMCV)**	
	— Used semi-supervised and label propagation methods to generate pseudo labels for a small (n=10) labeled Fundus image dataset to segment Optic Disc for a large unlabeled Fundus dataset.	Aug 2021 - Present
	— Created deep discriminative representation learning methods for predicting the complex disease of glaucoma through an explainable framework of Gradient-weighted Class Activation Mapping (Grad-CAM).	March 2021-Present
	— Developed robust Deep-Learning-based classification and semantic segmentation models respectively for predicting glaucoma and segmenting Optic Disc from noisy and heterogeneous real-world Fundus images, in a small data regime. (Resulted in an accepted abstract and a poster presentation at ARVO 2022. This work is under review in Ophthalmology Science Journal)	Feb 2021 - Present

Statistical (Learning) Timeseries Analysis

	— Developed AI-based methods for passive continuous monitoring of neuropsychiatric patients in their natural environment via connected technologies (i.e., smartphones, wearables) to holistically model individual's health that led to the invention of digital behaviorome in the healthcare AI area. (**Link** to published paper.)	March 2020 - June 2020
	— Developed a personalized healthcare AI technology for predicting the complex neuropsychiatric disorder of depression relapse using a novel Deep Learning-based multivariate timeseries anomaly detection method from sensor data collected through smartwatch wearable devices. (Resulted in a paper under-review at NPJ Digital Medicine - Nature Journal.)	May - Sep 2020
	— Developed Machine Learning-based algorithms (i.e., supervised and unsupervised methods) for biomarker discovery from the raw accelerometer data and collected through connected wearable devices (i.e., actiwatch) and keystroke dynamics data collected through **BiAffect** smartphone health application to create predictive models for depression (relapse). (**Link** to presented poster, Resulted in a poster presentation at the annual QS 2020 Conference at JnJ)	May - Sep 2020
	— Discovered associations between keystroke dynamics data, depression, age and diurnal patterns using statistical models (e.g., hierarchical growth curve). (**Link** to published journal paper, and **Link1**).	Feb 2019 - May 2020
	— Constructed potential digital biomarkers for depression based on keystroke dynamics data collected through **BiAffect** via a novel statistical method that significantly outperforms state-of-the-art methods for such task. (Resulted in an under-review paper in Physica A: Statistical Mechanics and its Applications Journal, **Link** to presented poster.)	March 2020 - Present

POSTER PRESENTATION	— **Rashidisabet, H.**, [and 16 others, including Leow, A.]. Characterizing Passively Collected Real-World Keyboard Dynamics in Mood Disorders as a Function of Age and Time-of-Day. Biological Psychiatry 87.9 (2020): S150. Society of Biological Psychiatry (SOBP); 2020. **Link**
	— Vesel, C., **Rashidisabet, H.**, [and 16 others, including Leow, A.]. Diurnal Patterns as Evidenced by Over Eleven Million Smartphone Keystrokes During Daily Usage: An iOS BiAffect Study. **Award-winning poster** presented at Annual National Network of Depression Centers Conference; 2019 Sept 24-25; Ann Arbor, MI. **Link**.
	— Vesel, C., **Rashidisabet, H.**, [and 16 others, including Leow, A.]. Diurnal Patterns as Evidenced by over Eleven Million Smartphone Keystrokes During Daily Usage: An iOS BiAffect Study. ACNP 58th Annual Meeting: Poster Session II. Neuropsychopharmacol. 44, 230–384 (2019). **Link**
	— **Rashidisabet**, H., Chan, P., Vajaranant, T., Yi, D. Real-World Data Generalization for Glaucoma Prediction. The Association for Research in Vision and Ophthalmology (ARVO); 2022. **Link**
	— *Complexity of keyboard dynamics in bipolar disorder: A BiAffect digital phenotyping study*. Bark, J., Demos, A.P., Zulueta, J., Stange, J., Duffecy, J., Hussain, F., Piscitello, A., Vesel, C., **Rashidisabet, H.**, [and 8 others, including Leow, A.].. Poster presented at the 2019 Society of Biological Psychiatry (SOBP). Chicago, IL.
	— *The CAN-BIND Collaborative Study: Replicating Models of MDD Relapse: The Challenges and Opportunities of Digital Biomarkers*. Li, Q., Raghavan, N., **Rashidisabet, H.**, Vairavan, S., Narayan, V., Kennedy, S. Poster presented at the internal QS 2020 Conference at JnJ company.

AWARD AND HONOR	— Won travel grant award in National Network of Depression Centers **(NNDC)** conference.	Fall 2019
	— Doctoral scholarship, Bioengineering Department, UIC, Chicago, IL.	Since Fall 2018
	— Governmental scholarship, Department of Mathematics, Statistics and Computer Science, UT, Iran.	2012 - 2016
	— Ranked top 0.5% among more than 500,000 participants of the national university entrance exam, Iran.	Fall 2012

TECHNICAL SKILL	— Programming language: Fluent in Python, and R. Experienced in C++, and Java	Since 2018
	• Python package: NumPy, Pandas, SciPy, scikit-learn, PyTorch, Nevergrad, PyOD, Matplotlib	
	• R package: dplyr, corrplot, psych, caret, logspline, fitdistrplus, lme4, lmerTest	
	— Software: Matlab, Tableau, Microsoft Office, RapidMiner	Since 2016