George Kassis

EDUCATION

University of Rochester School of Medicine and Dentistry   **Rochester, NY**
MD/PhD Candidate   *Aug 2023 – Present*

University of Rochester   **Rochester, NY**
Bachelor of Science in Neuroscience   *Aug 2018 – May 2022*
Minor in Electrical & Computer Engineering

HONORS AND AWARDS

• Summa Cum Laude Honor, 2022: Latin honor that is awarded to graduates with a final cumulative grade point average that comprises the top 2% of the class.
• Best Poster Award, 2021: Recognizes excellence in research, poster design, and presentation.
• ICARE STAR, 2021: A recognition for significant volunteering contributions at the University of Rochester Medical Center.
• Phi Beta Kappa, 2021: An honorary membership that recognizes and honors exceptional academic achievement in the arts and sciences.
• The Discover Grant for Undergraduate Summer Research, 2019: Supports immersive, full-time summer research experiences for select students at the University of Rochester.
• Dean's List all eligible semesters, 2018 - 2022: Students are placed on the dean's list for a certain semester if they have an overall semester grade point average above 3.4 and have completed 16 or more credit hours.
• Dean's Scholarship, 2018: Awarded to students who have demonstrated both academic achievement and the potential to make unique contributions to Rochester student life.

EMPLOYMENT HISTORY

The Pivot Group   **Remote | Washington, DC**
Political Data Coordinator   *June 2022 – Nov 2022*
• Implemented a Python algorithm and a Graphical User Interface to track and coordinate the flow of 500+ jobs between the data team and other teams at the company.
• Ran several statistical analyses in order to provide clients with visualizations of the demographics and voting history at the state, county, and district levels.
• Worked with Excel and IBM SPSS to store, preprocess, and statistically analyze lists of potential voters, with the aim of maximizing the voting turnout for client candidates.
• Queried USPS databases weekly to track over 10 million mail letters through printing facilities and monitor their reception by households.
• Assessed the prediction accuracy of several machine learning models, such as boosted decision trees and random forests, with regards to voters' propensity and partisanship scores.
• Met weekly with colleagues and clients to discuss steps that would further support the candidates' legislative plans.

Thakar Lab at the University of Rochester Medical Center   **Rochester, NY**
Research Assistant and Data Analyst   *May 2021 – Aug 2022*
• Queried online scientific databases for the topologies of twenty cellular networks and obtained gene annotations from the Ensembl genome database project by using their Perl API.
• Used R and Python to filter, normalize, and integrate single-cell RNA expression datasets.
• Investigated gene expression patterns using dimensionality reduction techniques such as PCA as well as clustering and visualization algorithms such as K-means, t-SNE, and UMAP.
• Used a genetic algorithm to computationally model and simulate the activation of immune cells in HIV, breast cancer, lung cancer, and COVID-19 patients.
• Used statistical tests such as the Chi-squared test, t-test, and ANOVA to quantify the significance of findings.
• Presented new findings at the University of Rochester Medical Center.

Biomedical Engineering Department at the University of Rochester   **Rochester, NY**
Teaching Assistant   *Jan 2021 – May 2021*
• Debugged and graded students' coding scripts and Arduino Uno projects.
• Held weekly office hours to answer students' questions and lead C/C++ coding tutorials.

Neuroscience Department at the University of Rochester   **Rochester, NY**
Teaching Assistant   *Aug 2020 – Dec 2020*
• Led one neuroscience recitation to facilitate students' discussion and guide them in solving questions.
• Assisted the professor in preparing sheep brains and guiding students' use of statistical software for a neurobiology lab.
• Held several review sessions prior to exams and replied to students' emails about assignments.

University of Rochester Center for Advanced Brain Imaging and Neurophysiology   **Rochester, NY**
Research Assistant   *Feb 2020 – May 2022*
• Prepared for research sessions by setting up, calibrating, and synchronizing EEG equipment, OptiTrack motion capture systems, and a Pupil Labs eye tracker.
• Administered Montreal Cognitive Assessment test to older adults in order to determine eligibility to participate in research.
• Prepped participants for experiments by applying conductive gel, placing EEG electrodes, and arranging motion capture markers.
• Monitored EEG signals, fixed technical issues, and ensured participants' comfort throughout the experiment.
• Trained and tested several classifiers including random forests, support vector machines, and recurrent neural networks to optimize the detection of different types of eye movements recorded by an eye tracker.
• Utilized dimensional reduction algorithms such as PCA and ICA to filter out artifacts in EEG data that are due to eye movements and muscle contractions.
• Performed data collection, data archiving, and data analysis using MATLAB, Python, and C++, with the purpose of identifying biological markers for Parkinson's disease and attention-deficit/hyperactivity disorder.
• Participated in the laboratory's journal club, where the research team met weekly to critically evaluate recent scientific articles.

Biology Department at the University of Rochester   **Rochester, NY**
Head Teaching Assistant   *Aug 2019 – May 2020*
• Led three workshops for two classes at the Biology Department to answer students' questions and provide them with studying resources.
• Arranged the review sessions and proctoring dates for the other teacher assistants at the Biology Department.

- Provided the other teacher assistants with advice and strategies to approach the various studying habits of students and lead effective workshops.

ORAL AND POSTER PRESENTATIONS

- George Kassis, Mukta G. Palshikar, & Juilee Thakar. Characterization of B Cell states with respect to BCR and HIF-1 Pathways using discrete-state modeling. 5 Aug. 2021. Summer Undergraduate Research Fellowship Exposition at the University of Rochester Medical Center. Rochester, NY. (Poster)

PUBLICATIONS

- Patelaki, E., Foxe, J. J., Mantel, E. P., Kassis, G., & Freedman, E. G. (2023). Paradoxical improvement of cognitive control in older adults under dual-task walking conditions is associated with more flexible reallocation of neural resources: A mobile brain-body imaging (MOBI) study. NeuroImage, 273, 120098. https://doi.org/10.1016/j.neuroimage.2023.120098

- George Kassis, Mukta G. Palshikar, Shannon Hilchey, Martin Zand, & Juilee Thakar. Modeling disease and vaccine specific B cell phenotypes using executable models. Journal of Theoretical Biology. (Under Review).

- George Kassis, Mukta G. Palshikar, & Juilee Thakar. Characterization of B Cell states with respect to BCR and HIF-1 Pathways using discrete-state modeling. Journal of Undergraduate Research University of Rochester. 20(1), 19–24. (Dec. 2021).

VOLUNTEER ACTIVITES

Saunders Research Building Vaccination Clinics   **Rochester, NY**
Patient Care Volunteer   *Jan 2021 – June 2021*
- Assisted in the process of checking patients in and out of the clinics.
- Assembled patients' forms and vaccination cards.
- Greeted patients and provided them with information regarding the appointment process.
- Provided wheelchair assistance when needed and directed patients through the wait-lines and the post-vaccination monitoring area.

Friends of Strong Memorial Hospital   **Rochester, NY**
Clinical Volunteer   *Aug 2019 – Dec 2019*
- Volunteered in the pediatric emergency department to assist nurses in responding to patients' questions.
- Monitored any changes in patients' vital signals and notified doctors when necessary.
- Transported persons via wheelchair or rolling bed.
- Provided support and assisted visitors with basic needs.

Stem Initiatives Club at the University of Rochester   **Rochester, NY**
Community Volunteer   *Sep 2018 – Mar 2020*
- Prepared Science Experiments for middle and high school students in order to foster their passion to learn science and support their pursuits of careers in STEM.

- Led and supervised high school students while preparing for their participation in national technology and science competitions.
- Guided students in building robots and reviewing competition questions from earlier years.

SKILLS

- Data Analysis: Python, C/C++, SQL, IBM SPSS, R, MATLAB.
- Data Visualization: Excel, Matplotlib, Seaborn, Tableau.
- Machine Learning: scikit-learn, Keras, Tensorflow.
- Imaging equipment: EEG, MRI
- Imaging software: Freesurfer, MNE, EEGLAB
- Signal processing: Digital Filters, Fourier Transforms, Laplace Transforms, Convolutions.
- Languages: English, Arabic, French.