Joyce Yu

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Education

University of California, Berkeley **Berkeley, CA**
- *Master of Science in Molecular Science and Software Engineering (GPA: 4.00)* *Aug 2024 – May 2026*
- *Bachelor of Arts in Integrative Biology (GPA: 3.60)* *Aug 2015 – May 2019*

College of San Mateo **San Mateo, CA**
Post-baccalaureate education *June 2023 - Aug 2024*

Relevant Coursework: Machine Learning Algorithms, Principles and Techniques of Data Science, From Data Warehousing to Big Data, Data Structures and Algorithms, Probability and Statistics in Biology using R, Programming languages for Molecular Sciences: Python and C++, Software Engineering Fundamentals for Molecular Sciences, Deep-Learning with convolution and graph neural networks, Linear algebra, Calculus, Statistics, Object-oriented programming, The Foundations of Data Science, Python web-scraping, Python Geospatial fundamentals

Languages and Technologies

- **Languages:** Python, C++, SQL, NoSQL, CSS/HTML, Bash/Git (version control), R
- **Developer and analytical tools:** VSCode, Jupyter notebook, MySQL, MongoDB, Github, R Studio, Excel, GraphPad PRISM, FlowJo,
- **Libraries:** Keras, PyTorch, Tensorflow**,** Scikit-learn, NumPy, Pandas, RDKit, OpenBLAS, Eigen, SciPy, BioPython, Matplotlib, Plotly, GeoPandas, sqlite, BeautifulSoup, pytest, tidyverse, dplyr, ggplot2, tibble

Work Experience

Curia Global **201 Industrial Road, San Carlos, CA**
Research Scientist III *March 2020 – Present*

- Served as technical lead for 27 R&D projects resulting in over 100+ uniquely discovered and characterized antibodies
- Built an interactive client-facing tool using Python to visualize and summarize 6 months of lab data
- Analyzed lab data, generated client-facing reports and presented results at weekly team meetings
- Selected by executive leadership committee to represent 3000+ employees at an international scale and assisted with global marketing content https://www.linkedin.com/feed/update/urn:li:activity:7139090251876077569/
- Trained and mentored 4 scientists and 1 college intern on workflows, wet and dry lab techniques, data collection, software for data analysis, report generation, and provided feedback for improvement
- Helped develop a new R&D service focused on anti-drug antibodies and pharmacokinetic (PK) studies.
- Led a team of 8 scientists and 3 project managers to execute operational duties, projected expenses with data analytical tools to minimize costs, delegated tasks, increased company revenue, and decreased client churn during company acquisition and transitionary phases

Stanford University (School of Medicine) **300 Pasteur Dr., Stanford, CA 94305**
Life Science Research Professional *June 2019 – Feb 2020*

- Assisted with data collection and analysis using R programming and provided additional lab support
- Conducted hypoxia experiments to study genetic mechanisms underlying different lung diseases
- Maintained detailed records of experiments, sample inventory, and the development of new protocols

University of California, Berkeley (Student Technology Services) **2610 Channing Way, Berkeley, CA**
Student Technology Consultant *May 2018 – May 2019*

- Served as part of campus technical support troubleshooting network connectivity issues, assisting campus associates with hardware and software problems, and providing documentation for training staff
- Resolved over 200+ tickets in the ServiceNow ticketing system
- Provided customer service over the phone, online, and in-person for a variety of devices and platforms

Projects

BANKING SYSTEM APPLICATION **Fall 2024**

- Collaborated with 3 engineers to create a banking application using Python and optimized data structures that allows users to simulate a banking system capable of creating accounts, withdrawals, deposits, and money transfers. The application keeps a historical record of transactions and prevents users from creating invalid or dangerous transactions (i.e. overdrafts and duplicate withdrawals).

MOLECULAR SUBSTRUCTURE SEARCH VIA GRAPH BASED MODELING AND ALGORITHMS **Fall 2024**

- Developed a python library and molecular fingerprinting algorithm that enables users to perform substructure searches of molecules and functional groups, perform graph-based modeling and visualizations for user-chosen molecules, and can identify aromatic structures and different functional groups using graph traversal algorithms.

SYSTEMIC EVALUATION AND RUN TIME ANALYSIS OF MOLECULAR SIMULATIONS **Fall 2024**

- Refactored on-going python scripts into C++ to improve the space and run time complexity of different methods used to compute the energy of particles in motion and make accurate predictions of larger systems through molecular dynamic simulations

LIGAND-BASED VIRTUAL SCREENING USING MACHINE LEARNING AND ALGORITHMS **Fall 2024**

- Helped implement virtual screening pipeline capable of screening large datasets of >100,000 small molecules, characterizing new drugs, generating a diverse compound library, and screening out toxic drug candidates
- Virtual screening pipeline consists of the following techniques: ROC curves and ML model comparisons, linear classification algorithms, sorting algorithms used to prioritize best drug candidates by comparing molecular descriptors, structural features, and chemical properties; kernel density estimator (KDE) used for assessments of pharmacophoric features; retrosynthesis for the curation of a new compound library, Taylor-Butina/agglomerative clustering and Tanimoto similarity measurements to score candidates and ensure drug diversity.

INTERACTIVE SUMMARY OF THERAPEUTIC ANTIBODY CANDIDATES (Curia) **Fall 2023**

- Built an interactive client facing visualization tool used to summarize 6 months' worth of lab data and product workflow.
- Ensured compliancy of client proprietary information in collaboration with IT and cybersecurity personnel.
- Taught BASH and Python basics to colleagues to help advance technical skills of others.

***2 Additional projects incorporating Computer Vision and/or Natural Language Processing (NLP) to be completed by May 2025.**

Publications, Patents, and Awards

MSSE Excellence Scholarship
Recognized by faculty and admissions committee of UC Berkeley's Master of Molecular Science and Software Engineering program for academic and professional accomplishments. Awarded March 13, 2024.

Wnt7a deficit is associated with dysfunctional angiogenesis in pulmonary arterial hypertension
European Respiratory Journal | June 08, 2023 | https://doi.org/10.1183/13993003.01625-2022

Field of invention: Antibodies for treating, preventing, and/or detecting SARS-COV-2 infection
Patent Publication #20230115257 | May 17, 2022 | https://patents.justia.com/patent/20230115257

Mural cell SDF1 signaling is associated with the pathogenesis of pulmonary arterial hypertension
AJRCMB | Feb 20, 2020 | https://doi.org/10.1165/rcmb.2019-0401OC

Received 3 awards by team and company vote at Curia for Employee's Choice (2022), Spot Award (2021), and Employee Appreciation (2020)