Postdoctoral Researcher, Chemical Engineering and Materials Science
Stevens Institute of Technology

Job Title Postdoctoral Researcher, Chemical Engineering and Materials Science

Department

Institution Stevens Institute of Technology
Hoboken, New Jersey

Date Posted Apr. 28, 2025

Application Deadline Open until filled

Position Start Date Available immediately

Job Categories Post-Doc

Academic Field(s) Material/Metallurgy
Chemical/Petroleum

Job Website https://stevens.wd5.myworkdayjobs.com/External/job/Hoboken-NJ---Main-Campus/Postdoctoral-Researcher--Chemical-Engineering-and-Materials-Science_RQ29070-1

Apply By Email

Job Description

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Location: Stevens Institute of Technology, Hoboken, NJ
Principal Investigator: Prof. Pin-Kuang Lai
Position Type: Full-time, 1-year appointment (renewable depending on funding and performance)

Project Overview:

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This position is supported by an industry-funded research collaboration between Stevens Institute of Technology and Janssen Research & Development, LLC. The project, *"Next Generation Viscosity Prediction for Molecular Liability Reduction and Multi-Parameter Optimization Development,"* focuses on building machine learning models and coarse-grained simulations to predict concentration-dependent viscosity behavior of therapeutic monoclonal antibodies (mAbs) based on empirical and in-silico features.

Key Responsibilities:

- Lead the development and benchmarking of machine learning models (regression/classification) to predict mAb viscosity at various concentrations.
- Perform molecular dynamics (MD) simulations to compute spatial charge maps (SCM), spatial aggregation propensity (SAP), solvent-accessible surface areas (SASA), and other structural descriptors.
- Develop and implement feature engineering pipelines for protein sequences and structures, including integration of Rosetta- and Schrödinger-derived features.
- Construct and validate coarse-grained (CG) molecular models with hydrodynamic calculations to predict viscosity curves across concentration ranges.
- Collaborate closely with Janssen's Computational Structural Engineering (CSE) and Biophysics teams through biweekly meetings.
- Prepare detailed project reports, including a six-month interim report and a final report for deliverables.
- Assist with manuscript preparation and publication of co-authored research results.

Qualifications:

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Required:

- Ph.D. in Chemical Engineering, Bioengineering, Computational Biophysics, Structural Biology, or a related field.
- Experience with molecular simulations (e.g., GROMACS, AMBER, NAMD) and coarse-grained modeling of biomolecules.
- Strong programming skills in Python and proficiency with machine learning libraries such as scikit-learn, PyTorch, or TensorFlow.
- Familiarity with protein structure analysis, homology modeling, and sequence-structure feature generation.
- Excellent written and verbal communication skills and ability to work independently and collaboratively.

Preferred:

- Experience with GPU-accelerated simulations and access to high-performance computing clusters.
- Background in biopharmaceutical formulation development, particularly mAb viscosity prediction or protein-protein interactions.
- Demonstrated track record of peer-reviewed publications in relevant fields.

Application Instructions:

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Interested candidates should send the following materials to Prof. Pin-Kuang Lai at plai3@stevens.edu:

- Cover letter detailing research interests and alignment with the project
- Curriculum Vitae (CV)
- Names and contact information for 2-3 references
- Links to relevant publications or software/code repositories (if available)

Department

Chemical Engineering and Material Science

General Submission Guidelines:

Please submit an online application to be considered a candidate for any job at Stevens. Please attach a cover letter and resume with each application. Other requirements for consideration may depend on the job.

Still Have Questions?

If you have any questions regarding your application, please contact Jobs@Stevens.edu.

EEO Statement:

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Stevens is building a diverse faculty, staff, and student body and strongly encourages applications from people of all backgrounds. Stevens is a federal contractor under the Vietnam Era Veterans' Readjustment Assistance Act (VEVRAA) and the Rehabilitation Act of 1973, as well as other federal statutes.

NSF ADVANCE Institution Stevens values diversity and seeks candidates who will contribute to a welcoming and inclusive environment for students, faculty, and staff of all backgrounds. We are an NSF ADVANCE institution committed to equitable practices and policies and strongly encourage applications from women, racial and ethnic minority candidates, veterans, and individuals with disabilities.

Jeanne Clery Disclosure:

In accordance with the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act (Clery Act), the Department of Public Safety is required to publish an annual security report which includes statistics mandated by the Clery Act. Click here for a copy of this report.

Contact Information

Please reference Academickeys in your cover letter when applying for or inquiring about this job announcement.

Contact

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