Postdoc: Machine learning and multiscale biomechanics modeling of cancer treatment
University of Utah

Job Title	Postdoc: Machine learning and multiscale biomechanics modeling of cancer treatment
Department	Scientific Computing and Imaging (SCI) Institute
	https://bio.mech.utah.edu/
Institution	University of Utah
	Salt Lake City, Utah
Date Posted	Aug. 16, 2024
Application Deadline	Open until filled
Position Start Date	Flexible
Job Categories	Post-Doc
Academic Field(s)	Mechanical Engineering
	Chemical/Petroleum
	Bioengineering (all Bio-related fields)
Job Website	https://bio.mech.utah.edu/
Apply By Email	amir.arzani@sci.utah.edu

Job Description

The Computational Biomechanics Group (https://bio.mech.utah.edu/) at the University of Utah's Scientific Computing and Imaging (SCI) Institute led by Dr. Amir Arzani is hiring a postdoctoral researcher.

About the project: The project integrates scientific machine learning and multiscale biomechanics modeling of cancer and is in collaboration with the University of Utah's Huntsman Cancer Institute

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(HCI). The project involves developing quantitative systems pharmacology (QSP) models coupled with tumor growth biomechanics models. Theoretically, the project builds on data-driven dynamical systems, scientific machine learning (SciML), and finite element modeling of growth and remodeling (G&R).

Required qualifications:

- Experience with open-source tools for finite element modeling (e.g., FEniCS) and/or software development.
- Experience with numerical solution to differential equations (systems of ODEs/PDEs).

Preferred qualifications:

- Strong background in continuum mechanics and computational solid mechanics.
- Experience with machine learning and PyTorch.

What is the candidate expected to bring to our lab?

The candidate should be an expert in at least one of the following topics (Specify in your application which one):

- 1- Finite element modeling in biomechanics (solid mechanics) and growth & remodeling (G&R) theory.
- 2- Scientific machine learning (e.g., system identification, inverse modeling, dimensionality reduction, scientific deep learning).
- 3- Systems biology modeling: QSP model development, physiologically based pharmacokinetic (PBPK) modeling, pharmacodynamics (PD) modeling, or mathematical systems biology model development.

What will the candidate gain?

The postdoc will learn about state-of-the-art SciML techniques, multiscale modeling, modeling and

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optimizing cancer drug treatment, and cancer mechanobiology. The candidate will also get the opportunity to collaborate with other lab members in projects ranging from SciML method development, SciML applied to cardiovascular problems, and computational cardiovascular biomechanics modeling.

About the SCI Institute and University of Utah:

University of Utah is classified as an R1 School (very high research activity) and Utah's Engineering programs are ranked among the best in US public schools. For example, in the 2024 Wall Street Journal ranking Utah ranked 8 among the public schools in the US. Over the past three decades, the SCI Institute has established itself as an internationally recognized leader in visualization, high-performance/scientific computing, data management and analytics, and image analysis applied to a broad range of domains.

https://www.sci.utah.edu

Many SCI graduates are now successful professors and/or industry leaders:

https://www.sci.utah.edu/people/alumni/post-docs.html

https://www.sci.utah.edu/people/alumni/graduate-students.html

University of Utah's medical school and College of Pharmacy programs are top ranked in the nation and the candidate will get the opportunity for various collaborations.

More about our lab:

https://bio.mech.utah.edu/

How to apply:

Send an email to amir.arzani@sci.utah.edu with the title: "postdoc applicant: ML+cancer". In the email talk about your interests/background. PLEASE MAKE SURE to specify in which one of the above three

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topics you are an expert.

Contact Information

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

Contact

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University of Utah
Salt Lake City, UT