Contact

www.linkedin.com/in/pankajsyngh (LinkedIn)

Top Skills

Optimization
Entrepreneurship
Business Development

Languages

English (Native or Bilingual)
Hindi (Native or Bilingual)
Urdu (Elementary)

Certifications

Machine Learning
Deep Learning Specialization

Honors-Awards

Colman Leadership Fellow
Olin Fellowship
Central Board of Secondary Education (CBSE) merit scholarship

Publications

Curvature sorting of proteins on a cylindrical lipid membrane tether connected to a reservoir
Coarse-Grained Model of SNARE-Mediated Docking
A continuum model of docking of synaptic vesicle to plasma membrane
Hydrodynamics govern the pre-fusion docking time of synaptic vesicles

Pankaj Singh

Modeling & Simulation | Applied Mathematics | Scientific Machine Learning | Software Development | R&D Project Management |
Ithaca, New York, United States

Summary

Versatile computational modeler currently working on glass viscosity and chemical strengthening. Passionate to learn and deploy advances in the field of computational modeling.

In the past, I have applied my computational modeling knowledge towards Cell Mechanics, Continuum Mechanics and Ergonomics.

Proficient in modeling techniques: Mathematical modeling, Numerical Methods, Optimization, Physics Informed Neural Networks (PINNs), Finite Element Analysis, Molecular Dynamics

Experience

Corning Incorporated
4 years 7 months

Senior Process Simulation Engineer
April 2022 - Present (1 year 1 month)
Corning, New York, United States

Process Simulation Engineer
October 2018 - April 2022 (3 years 7 months)
Corning, NY

- Application of Physics Informed Neural Networks (PINNs) in modeling and simulation.
- Leading process modeling effort for Ion Exchange strengthening in Corning Glass Products using
FEA and mathematical modeling
- Leading research initiatives in understanding glass viscosity for Corning display, ULE, and Ion
Exchanged glasses

Mentore
Co-Founder/Lead Engineer

June 2016 - October 2018 (2 years 5 months)
Ithaca, New York Area

Launched a B2B company in biomotion analytics to reduce workplace injuries and improve workforce productivity primarily targeted towards wrist injuries.

As a Co-Founder we established client relationships with Fortune 500 and Global 500 companies in food processing industry and ed the company through multiple startup accelerators, incubators and brand transition. We were able to seed money and prototyping resources valued $ 500K.

As a Lead Engineer, I led team of 5 engineers to develop bio-motion analytics dashboard and hardware for wrist injury prevention, which provided ergonomics information in the plant at various levels of granularity collected using wearable IoT devices.

Cornell University
Graduate Research And Teaching Assistant
January 2013 - December 2017 (5 years)
Ithaca, New York Area

Thesis Advisor: Dr. Chung-Yuen Hui, Field of Theoretical and Applied Mechanics, Mechanical and Aerospace Engineering

Neuro-transmission is an intricate process involving an interplay between electric impulses and chemical transfer between neurons.

For my doctoral research I conducted research on theoretical and numerical modelling of biological membrane fusion under the influence of SNARE proteins in extremely specific physiological conditions. My primary focus was on synaptic vesicle fusion and docking aspect of neuro-transmission.

I developed rigorous analytical and computational models to capture mechanics of cell membrane deformation and pinned down the optimal requirements for a successful neurotransmission. I used coarse-grained molecular simulations to capture the molecular details of the membrane fusion and understand the underlying steps of the fusion process.

My doctoral work is published in three impactful journal articles.

Indian Institute of Technology, Kanpur
Graduate Research Assistant

May 2011 - July 2012 (1 year 3 months)
Kanpur, India

Thesis Advisor: Dr. Sovan L Das, Department of Mechanical Engineering

The cell shape remodelling is an inevitable process carried out by proteins, with applications ranging from endoytosis, exocytosis, tether formations etc.

For my Master's research, I worked on the interplay between the membrane curvature and peripheral proteins by combining the thermodynamics of protein distribution and continuum mechanics model of biological membrane deformation. Using this hybrid model, I deduced the membrane shape details upon the variation of different physiological parameters.

My Master's research work is published in one journal article.

Oklahoma State University
Research Intern
May 2010 - July 2010 (3 months)
Stillwater, Oklahoma

Project Advisor: Dr. Don Luca

At the end of this internship, I delivered an ANSYS APDL-based nanoindentation modeling tool that could generate applied force vs. indentation depth curves for a given thin film material and hence obtain its hardness.

Education

Cornell University
Doctor of Philosophy (Ph.D.), Theoretical and Applied Mechanics, Mechanical and Aerospace Engineering · (2012 - 2017)

Texas McCombs School of Business
Post Graduate Program in Artificial Intelligence and Machine Learning · (January 2022 - August 2022)

Indian Institute of Technology, Kanpur
Master’s Degree, Mechanical Engineering · (2011 - 2012)

Indian Institute of Technology, Kanpur
Bachelor’s Degree, Mechanical Engineering · (2007 - 2011)