

Shashank Katiyar

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EDUCATION

Carnegie Mellon University

Master of Science in Computational Biology

Pittsburgh, PA

June 2025

Indian Institute of Technology Kanpur

Bachelor of Technology in BioSciences and Bioengineering

Kanpur, India

June 2023

GPA: 9.1/10 – Department Rank: 1

EXPERIENCE

TenSixty BioSciences: Drug Discovery

Machine Learning Intern

Cambridge, MA (Remote)

September 2022 – July 2023

- Designed pipeline for Marker Gene Identification of rare cell types found in cancer, employing scRNA sequencing data and Scanpy Library, and discovered their prevalence in Cancers from TCGA
- Collaborated with Amazon Web Services officials to execute Kallisto sequencing tool on Amazon Web Services parallel, with Docker, for high throughput processing of raw FASTQ files at isoform level
- Identified a differentially expressed isoform for small cell lung cancer for specific cancer drug targeting
- Designed a protein binder for identified isoform with RFDiffusion with Alignment Error of 10
- Developed 3D visualization tool for regions inside and outside cell membrane of transmembrane proteins

PROJECTS

Understanding Gene Networks: Toggle Polygons

Mentor: Prof. Mohit Jolly, IISc Bangalore

Kanpur, India

March 2022 – July 2022

- Executed toggle polygons, a type of gene network motifs, employing computational tool RACIPE
- Automated RACIPE to get a large dataset of toggle polygon variants for training an ML model
- Implemented neural network to predict frequency of states and got maximum testing accuracy of 95%

Tissue Clustering in Spatial Transcriptomics data

Mentor: Prof. Hamim Zafar, IIT Kanpur

Kanpur, India

January 2022 – March 2022

- Performed dimension reduction on Visium Spatial Expression Data with Autoencoder from scvi-tools
- Developed a neural network to perform spot-clustering in unknown tissue of same type (mouse brain) using latent dimensions from autoencoder and obtained ARI of 0.7

Inferring Evolution of Oral Cancer in Patients

Mentor: Prof. Hamim Zafar, IIT Kanpur

Kanpur, India

July 2022 – October 2022

- Extracted Oral Cancer WGS data from ICGC and processed it to obtain point mutations in VCF format and Copy Number Variations with Mutect2 and ABSOLUTE tools respectively
- Inferred Phylogeny of Intra-Tumor Heterogeneity for better Oral Cancer Characterization

Slithbot: Slither playing AI

Ongoing Self Project

Pittsburgh, PA

August 2023 – Present

- Implemented object detection (snake) in online multiplayer game Slither.io with OpenCV
- Optimizing a Reinforcement Learning AI to play Slither by itself, to reach top of Leaderboard

SKILLS

Programming: C/C++, Python, Go, Shell Scripting, R

Toolkit: Docker, AWS Parallel, Tensorflow, Pytorch, RFDiffusion, Git/Github, OpenCV, ABSOLUTE, NGS, GATK- Mutect2, PyMOL, Scanpy, MUSCLE, Bedtools, Kallisto, SCVI-tools, Visium, Microsoft Office

AWARDS

- Excellence in Education Medal for best academic performance in Biological Sciences department
- Academic Excellence Award for being in top 10% of batch for 2 consecutive years: 2021-22 and 2022-23

LEADERSHIP

Autonomous Underwater Vehicle, IIT Kanpur | Team Head

Dec 2019 – May 2022

- Led and guided a team of 25 individuals into developing an Autonomous Underwater Vehicle
- Won 3rd, 4th, 8th and 16th positions in Intl. AUV competition Robosub'21, among 53 teams worldwide