Rituparna Khan

1121 Greentree Ct, Tallahassee FL 32304 | Email : rk18g@fsu.edu | Mobile : +1-850-443-3413
Website: rituparna-13.github.io/rituparna.github.io | Google Scholar | LinkedIn

Summary

I am a **Computer Science** PhD candidate at Florida State University and my PI is Dr. Xian Mallory. My research focuses on studying and developing novel computational tools for large biological data sets using **statistical inference and Machine Learning** that can help understand biological processes such as cancer. I am looking for summer 2024 internship opportunities as a Bioinformatician or Computational Biologist and my **expected Graduation** is Fall 2024.

Education

- **PhD, Department of Computer Science** — Aug. 2018 – Present, **GPA 3.85**
  Florida State University — *Tallahassee, Florida*
- **Bachelor of Technology, Information Technology** — Aug. 2010 – Jun. 2014, **GPA 8.43/10**
  Maulana Abul Kalam Azad University of Technology — *Kolkata, India*

Technical Skills

- **Programming Languages:** Java (Spring and Hibernate, JavaScript), Python (Scikit-learn, NumPy, SciPy, Pandas, Matplotlib, Pydot, Tensorflow, Keras), Bash, SQL, Spark/SparkML, R
- **Bioinformatics computational tools:** samtools, GATK, bedtools, STAR, Bowtie, Bowtie2, Ensembl VEP, RSEM, TopHat Fusion, Annovar, netMHC I and II, IGV, SCITE, SiCloneFit, BnpC, SBMClone, SiFit, SCG, SCClone, RobustClone, LACE, CALDER.
- **Linux skills:** Experienced in Slurm and HPC.
- **Data Analysis and Statistics Tools and Frameworks:** Simulations, Bayesian Methods, Clustering, Sampling Methods, Machine Learning (Decision Trees, Random Forests, Naive Bayes Classifiers, Linear and Logistic Regression, Support Vector Machine, Principal Component Analysis, K-means, K-Nearest Neighbors, Neural Networks, Ensemble Models), Deep Learning (CNN, RNN, LSTM, Transformer), Git
- **Sequencing data:** Whole-genome shotgun sequencing (WGSS) DNA, single cell DNA from Next-generation sequencing, Fluidigm C1 single-cell RNA sequencing using HiSeq

Work Experience

- **Lead Web Developer - IT** — Dec. 2014 - May. 2018
  Wipro Technologies — *Bangalore, India*
- **Graduate Research Assistant, PI: Dr. Xian Mallory** — May 2021 - Present
  Florida State University — *Tallahassee, FL*
- **Graduate Research Assistant, PI: Dr. Michael Gubanov** — Sep. 2018 - April 2021
  Florida State University — *Tallahassee, FL*
- **Course Instructor, Course: Advanced programming with Java** — May. 2023 - Aug 2023
  Florida State University — *Tallahassee, FL*
- **Lead Teaching Assistant, Course: Bioinformatics** — Fall 2022 and Fall 2023
  Florida State University — *Tallahassee, FL*

Research: Publications, Preprints and Manuscripts

- **Rituparna Khan**, Xian Mallory, "scLongTree: an accurate computational tool to infer the longitudinal tree for scDNAseq data," (Submitted in RECOMB 2024 and accepted for a poster presentation at American Society of Human Genetics (ASHG) Annual Meeting 2023). **Summary:** developed a computational tool using statistical inference and machine learning that can tell how cancer cells evolve given the single cell DNA sequencing data at different time.

- **Rituparna Khan**, Xian Mallory, "Methods for eQTL detection from Single-cell RNA Sequencing Data," (In preparation). **Summary:** Reviewing available eQTL detection tools.

- **Rituparna Khan**, Xian Mallory, "Assessing the Performance of Methods for Cell Clustering from Single-cell DNA Sequencing Data," : https://doi.org/10.1371/journal.pcbi.1010480, (Published in PLOS Computational Biology 2023). **Summary:** Benchmarked available clustering tools for single cell DNA sequencing data.

- **Rituparna Khan**, Michael Gubanov, "Weblens: Towards interactive large-scale structured data profiling," Proceedings of the 29th ACM International Conference on Information & Knowledge Management 2020. **Summary:** Analyzed large scale structured data available from millions of sources in the web and developed models using Machine learning and deep learning to summarize the metadata of specific real world objects.

- **Full list of publications:** **Google Scholar Link**

Awards and Recognitions

– Jan. 2024 : Will be featured for my research in Florida State University's Spectrum magazine.
– Nov. 2023: Received Ermine M. Owenby, Jr. Travel Award from the FSU College of Arts & Sciences for presenting in ASHG 2023.
– Oct. 2023 : Received travel grant from FSU Congress of Graduate students for presenting in ASHG 2023.
– Sep. 2023 : Selected to be a part of Florida State University's Women's Leadership Institute.
– Apr. 2019 : Best technology project award in Big data management and Analytics System course, Florida State University.
– Dec. 2017 : Client appreciation award from Wipro Technologies for successfully completing a project as the lead developer.
– Mar. 2015 : Technical Readiness Program Topper in Wipro Technologies.

Selected Presentations

– Nov. 2023 : American Society of Human Genetics Annual Meeting 2023, Washington, DC.
Poster: scLongTree: a novel highly-accurate and scalable computational tool to infer the longitudinal tree from longitudinal scDNAseq data
– Oct. 2023 : CAP5540: Bioinformatics: Sequence Analysis.
Invited Talk: scLongTree: a novel highly-accurate and scalable computational tool to infer the longitudinal tree from longitudinal scDNAseq data, Florida State University.
– Apr. 2023 : Computer Science Exposition, Florida State University.
Poster: Assessing the Performance of Methods for Cell Clustering from Single-cell DNA Sequencing Data.
– Oct. 2020 : 29TH ACM International Conference On Information and Knowledge Management, Online
Talk: Weblens: Towards interactive large-scale structured data profiling

Extracurricular Activities

- **Cohort**, 2023 Florida State University's Women's Leadership Institute.

- **Participant**, FSU 9th Annual Art in STEM Exhibition, 2023. Link to my art submission.

- **Teacher Volunteer**, Taught arts and crafts to underpriviledged students for NGO Bhumi, Bangalore, Nov 2017 - May 2018.