PRANAVA UPPARLAPALLI

Leesburg, VA 20175 | +1 (945) 527-5490 | pxu.bioinfo@gmail.com | Pranava U | Bit-2310` | Portfolio

Summary

Bioinformatics Scientist with a master's degree and proven experience building reproducible pipelines for genomics and transcriptomics. Skilled in applying machine learning techniques to biological datasets and integrating multi-omics data for translational insights and biomarker discovery. Proficient in both wet and dry lab methodologies, with a strong focus on reproducibility, clinical genomics, and collaborative problem solving.

Work Experience

Dr. Xuan's Lab | *Bioinformatician - Genomics Data Analyst*   **Jan 2025 - May 2025**
- Validated a GWAS-based machine learning model (PrediXcan) using GTEx data to improve genotype–phenotype interpretation and predict tissue-specific gene expression.
- Conducted Hi-C based analysis of trans-SNPs to uncover long-range regulatory interactions and their role in phenotype variation.
- Developed reproducible, modular pipelines with Bash and HPC environments, integrating version control and structured documentation for scalable genomic analysis.

Sree Vidyanikethan Degree College | *Microbiologist - Antimicrobial Susceptibility*   **Aug 2020 - Mar 2021**
- Developed and optimized antimicrobial susceptibility assays to investigate the antioxidant and antibacterial properties of *Biancaea sappan*.
- Executed lab experiments that improved compound yield efficiency by 15% through optimized design.
- Enhanced microbial growth conditions by formulating specialized media and conducting antibacterial testing.
- Collaborated with faculty and peers to design experiments, analyze results, and ensure reproducibility of findings.

Projects

Cancer RNA-Seq Expression Analysis | https://github.com/Bit-2310/cancer-rna-seq-analysis   **May 2025 - Jun 2025**
- Built an R-based pipeline to perform QC, normalization, and differential expression analysis across five cancer types using DESeq2. Included detailed metric reporting for transparency and reproducibility.
- Translated complex expression data into actionable visualizations (heatmaps, PCA plots) to facilitate biomarker discovery and communicate clustering patterns to research partners.

Gleason Score Classification Using ResNet-50 | https://github.com/Bit-2310/Gleason_Classifier   **Sep 2024 - Dec 2024**
- Achieved 90% accuracy in classifying prostate cancer by developing a ResNet-50 deep learning pipeline, demonstrating a direct application for annotating clinical histological data.
- Implemented data augmentation and reproducibility measures for transparent ML workflow documentation.

Yeast-Stress Analysis | https://github.com/Bit-2310/yeast-stress   **Dec 2024 - Jan 2025**
- Designed a modular RNA-Seq pipeline using Nextflow and Docker with automated QC metrics, alignment (HISAT2), quantification (FeatureCounts), and structured logging.
- Applied edgeR for DE analysis and included pathway enrichment and reproducibility reports via plots and tracked config files.

SeqMorph: Sequence Mutation Simulator | https://github.com/Bit-2310/SeqMorph   **Sep 2024 - Sep 2025**
- Engineered a versatile Python tool to simulate mutations in DNA/RNA/protein sequences. Integrated mutation tracking and metadata export for auditability.
- Implemented features for codon/frame shift analysis and export in FASTA/CSV formats for downstream QA or clinical annotation.

Skills

- **Genomics & Analysis:** Next-Generation Sequencing, RNA-Seq, scRNA-Seq (Seurat), Variant Calling, Hi-C, TWAS, eQTL Analysis
- **Programming & Databases:** Python, R, Bash/Shell, SQL
- **Workflow & Cloud:** Nextflow, Docker, Git, Conda, Slurm, AWS (S3, EC2), HPC
- **Machine Learning:** Scikit-learn, PyTorch, Deep Learning (CNNs, ResNet)
- **Resources:** GEO, dbSNP, UCSC Genome Browser, Ensembl, KEGG, IGV
- **Documentation & Governance:** Version Control, Reproducibility, Good Documentation Practice (GDP), Evaluation Metrics
- **Wet Lab techniques:** PCR / qPCR, CRISPR, Gel Electrophoresis, HPLC, Media Optimization

Education

University of Texas at Dallas, Richardson, TX   **Aug 2023 - May 2025**
Master of Science, Bioinformatics and Computational Biology   *Richardson, TX*

Bharati Vidyapeeth University, Pune, MH, India   **Aug 2022 - May 2023**
Advanced Diploma, Bioinformatics   *Pune, MH*

Sri Venkateshwara University, Tirupati, AP, India   **Jun 2019 - May 2022**
Bachelor of Science, Microbiology, Biochemistry, and Chemistry   *Tirupathi, AP*