Urminder Singh

Ames, IA 50011

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PROFESSIONAL SUMMARY

- Bioinformatician with over 8 years of experience working with high-dimensional NGS, RNA-Seq, and genomic datasets
- Proficient knowledge in Data structures and Algorithms, Statistics, Optimization, Mathematics, and Analytics
- Experienced programmer and software engineer with experience in managing small teams
- COVID-19 Exceptional Effort Graduate Student Research Impact Award
- Solid publication record with 6 first-author publications in high-impact in peer-reviewed bioinformatics journals
- Excellent record of inter-disciplinary collaboration with researchers from diverse fields, cultures, and nationalities
- Confident and articulate speaker with the ability to present scientific ideas to a diverse audience

TECHNICAL SKILLS

Bioinformatics Analysis: RNA-Seq, scRNA-Seq, ChIP-Seq, GATK, eQTL analysis, Network analysis, Pathways
Machine Learning and Data Analysis: TensorFlow, Keras, NumPy, Pandas, Scikit, Tidyverse
Programming Language: Python, Java, R, C, C++
OS: Linux, Windows, macOS
Database: MySql, MongoDB
Reproducible Workflow Management: Snakemake, NextFlow, Luigi, Anaconda, Docker
Miscellaneous: Eclipse, Spyder, GitHub, Slack, Slurm, PBS, LaTeX, Unit-testing, Continuous-Integration

EDUCATION

Iowa State University (ISU), Ames, IA **August 2016-July 2021**
Ph.D. Candidate, Bioinformatics and Computational Biology (Minor in Statistics)

Jawaharlal Nehru University, New Delhi **August 2013-June 2015**
Master of Technology, M.Tech.
Computational and Systems Biology

South Asian University, New Delhi **Sept. 2010-June 2013**
Master of Computer Applications, M.S.
Computer Science

University of Delhi, Delhi **August 2007-June 2010**
Bachelor of Science, B.S.
Applied Physical Sciences

EXPERIENCE

Genetics, Developmental, and Cell Biology, ISU, Ames, IA **August 2017-Present**
Bioinformatician Graduate Research Assistant

- Collaborated with international research teams COV-IRT and COVID-19 Consortium, in accelerating COVID-19 research
- Designed, developed, implemented, and executed big data computational workflows for automated and reproducible analysis of >30,000 bulk and single-cell RNA-Seq datasets (250 terabytes) from GTEx, TCGA, and SRA
- Formulated novel computational pipelines for annotating novel disease biomarkers in diseases like cancer and COVID
- Worked on a deep generative model for RNA-Seq normalization and batch-correction
- Developed and published efficient, open-source computational tools in python, Java, and R for big data statistical analysis and interactive visualization with emphasis on reproducibility
- Co-authored 2 successful research grants and served as Co-PI ($42,529)
- Trained and mentored 3 graduate and 4 undergraduate students' research thesis/projects
- Contributed to 12 manuscripts, 6 first-author peer-reviewed journal papers

- Delivered 7 invited talks and presentations and 5 poster presentations at diverse scientific conferences
- Conducted and taught 3 data science workshops at Iowa State University and University of Houston

Genetics, Developmental, and Cell Biology, (ISU), Ames, IA **August 2017-December 2017**
Human Anatomy Lab Teaching Assistant
- Taught and demonstrated the lab exercises to 2 sections with 20 undergraduate students each
- Managed and supervised 2 undergraduate TAs
- Developed and graded weekly homework assignments and tests

School of Computational and Integrative Sciences, JNU, New Delhi **Nov. 2015-July 2016**
Bioinformatician Researcher
- Developed a novel machine learning method, PlncPRO, for accurate identification of long non-coding RNAs
- Contributed to multiple projects involving RNA-Seq analysis and biological database design
- Published 2 papers in top-bioinformatics journals
- Assisted in setting up the lab's computing cluster

School of Computational and Integrative Sciences, JNU, New Delhi **August 2013-June 2015**
Bioinformatician Graduate Researcher
- Formulated novel machine learning, deep learning, and information theory based methods for whole-genome sequence analysis
- Developed ORIS, a Java tool for interactive exploratory data analysis and visualization of genomic data
- Presented and published my work at a top computer science conference

LEADERSHIP SKILLS AND SERVICE EXPERIENCE

State Science and Technology Fair of Iowa, Ames, IA **March 2020-April 2020**
Science Fair Judge, Biomedical and Health Sciences
- Assessed 15 biomedical and health sciences projects in terms of methodology, creativity, and presentation skills

Substrate Games, Des Moines, IA **July 2019-August 2019**
Software Consultant
- Consultant on hiring decisions with Substrate Games
- Interviewed and assessed candidates for a lead game programmer position

Bioinformatics Graduate Student Organization, ISU, Ames, IA **August 2017-July 2018**
Executive Board Member
- Served as the Director of IT operations for Bioinformatics Graduate Student Organization
- Organized and planned multiple programming and data analysis workshops
- Prepared materials and taught 2 data science with python workshops to diverse audiences (>50 people per session)
- Contributed to organizing and planning the annual BCB symposium at Iowa State University

SELECT PUBLICATIONS (2 of 15)
- **Singh, Urminder et al.** "MetaOmGraph: a workbench for interactive exploratory data analysis of large expression datasets." ***Nucleic acids research* 48.4 (2020)**
- **Singh, Urminder, et al.** "PLncPRO for prediction of long non-coding RNAs (lncRNAs) in plants and its application for discovery of abiotic stress-responsive lncRNAs in rice and chickpea." ***Nucleic acids research* 45.22 (2017)**

SELECT HONORS/GRANTS (2 of 12 honors/grants)
- COVID-19 Exceptional Effort Graduate Student Research Impact Award, ISU ($500) **Jan 2021**
- Wendell Miller Trust Graduate Fellowship, ISU ($15,000) **August 2016**

SELECT PROFESSIONAL ASSOCIATIONS
COVID-19 International Research Team - Member **2020-Present**
Sigma Xi, USA - Elected Associate Member **2020-Present**
Society for Molecular Biology and Evolution - Member **2020-Present**