Sedat Demiriz

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Professional Summary

Bioinformatics Programmer with 3 years of experience. Specialty areas include application of reproducible software development methods to solving research problems, identifying associations in genotyping and NGS data from general and disease population cohorts

Experience

Computational Biologist - *Sequence Bio Inc.* *Jul '21 – Nov '23*

- Lead the development of scalable and reproducible GWAS and ROH analysis pipelines to identify genotype-phenotype associations in company's Newfoundland founder population cohort
- Implemented standalone and pipeline step scripts for genomic data analysis and visualization to identify genes of interest for an international collaboration with pharma company
- Combined internal and public data sources to characterize the distribution of the founder effect across Newfoundland and its relation to source populations in Ireland and Britain

Research Programmer - *BC Genome Sciences Center* *Nov '20 – Mar '21*

- Performed QC on inbound AML NGS data using standard NGS quality metrics to ensure clean data input for lab's internal analysis platform
- Streamlined existing QC and visualization scripts and refactored for flexibility of use for future QC efforts
- Addressed graduate student questions about ways of solving AML research questions by showcasing scripting and command line approaches to tackling data transformations

Biosensor R&D Co-op Programmer - *CiBER Lab, SFU* *May – Sep '18*

- Automated biosensor voltage response curve data processing and visualization for display and diagnosis of individual sensor instances to identify issues in the fabrication process
- Screened hundreds of sensor instances during development to achieve sample sizes necessary for confidence in manufacturing
- Implemented and presented metrics for determining biosensor instance success based on response pattern to inform lab heads on progress made on the development of the manufacturing process

Genetics Co-op Student - *Istanbul University Genetics Institute* *May – Aug '16*

- Carried out patient PCR, DNA and RNA isolation and sample QC procedures for input clinical NGS diagnostics
- Worked routinely in cell culture lab to grow five varieties of tumor cell populations for cancer studies at the lab
- Lead and supervised four other co-op students during their first month with the lab to ensure good integration

Skills

- Software development experience in Python, R, and Bash using good software development practices: version control, unit testing, documentation
- Writing robust data transformation and analysis scripts and producing easy-to-understand charts and plots to visualize underlying patterns in genomics data
- Development of scalable workflows on Linux, leveraging HPC and Cloud resources for processing large NGS datasets using industry standard bioinformatics tools
- Identifying phenotype-genotype associations in clinical data from general population cohorts
- Querying SQL relational databases and unstructured public data sources to derive insights

Education

BSc Joint Major Mol. Biology and Biochem. & Comp. Sci. - *Simon Fraser University* *'15 – '20*

- Computing Science: Data Science, Machine Learning, Databases, Algorithms
- Molecular Biology: Bioinformatics, Human Genomics, Applied Wet Labs
- Statistics: Exploratory Data Analysis, Experimental Design and Analysis

Publications

- Gilbert, E., Zurel, H., MacMillan, M. E., Demiriz, S., Mirhendi, S., Merrigan, M., O'Reilly, S., Molloy, A. M., Brody, L. C., Bodmer, W., and et al. (2023). The Newfoundland and Labrador Mosaic founder population descends from an Irish and British diaspora from 300 years ago. *Nature Communications Biology*

- Zurel, H., Bhérer, C., Batten, R., MacMillan, M. E., Demiriz, S., Mirhendi, S., Gilbert, E., Cavalleri, G. L., Leach, R. A., Scott, R. E. M., and et al. (2022). Characterization of the Y chromosome in Newfoundland and Labrador: Evidence of a founder effect. *bioRxiv*