Rola Dali, PhD

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Position

Bioinformatics Specialist at McGill University's Canadian Centre for Computational Genomics (C3G), probing questions related to human health by building bioinformatics tools and analyzing genomic data.

Skills

- **Expertise:** Senior research scientist: versed in scientific research methods, pipeline development and data analysis, *including* experimental design, variable isolation, data collection, quality control, data transformation, data visualization, large data, data analysis, writing scripts/pipelines for data processing, writing reports and presenting findings
- Python, R, Java, Bash, awk, sed, HTML, CSS, markdown, mySQL, Hadoop
- Extensive experienced with High Performance Computing systems: Batch, PBS/Torque, Slurm
- Version control using git: github, bitbucket
- Operating Systems: Mac, Linux, Windows
- Proficient with Microsoft Suite, Google Suite, Adobe Suite (Illustrator, Photoshop)

Experience

Bioinformatics Specialist – Tech. Dev. Team — July 2017 - Present — McGill University's C3G

- Technology/Software Development:
  - Developed two complete processing pipelines as part of the GenPipes Framework for bioinformatics processing.
  - Edited open source tools to add new functionalities including MultiQC and HICUP.
  - Set up GenPipes' automated daily testing using Jenkins and worked on minimizing bugs and errors.
  - Leading a team to develop a reporting system for GenPipes using MultiQC.
  - Contributed to code edits, reviews and fixes.
  - Contributed to GenPipes documentation, tutorials and community support.
- Data Analysis:
  - Quality controlled, visualized and analyzed large amounts of data (over 30 TB per project) for large international consortia, including IHEC & 4DN.
  - Met regularly with collaborators to present and explain analysis results.
- Administration and Teaching:
  - Involved in various C3G logistics, *including* grant & manuscript writing, as well as annual progress report preparation.
  - Managed Google Summer of Code (GSoC) program at C3G for 2018 & 2019 and Google Season of Docs 2019.
  - Lead a team to develop and give workshops in bioinformatics, data analysis and visualization.

PhD candidate in NeuroScience and Bioinformatics — Jan 2010 - Jun 2017 — McGill University

- Designed, conducted and analyzed experiments, both wet bench and computational, to understand development and disease.
- Developed RobusTAD, a tool to analyze chromatin insulation patterns crucial in understanding DNA 3D structure.
- Collected, quality controlled, visualized and analyzed data to understand brain cancer development.
- Met regularly with team members and collaborators to present and explain findings.

Summer Intern — Oct 2010 – Dec 2010 — Massey University, NZ

- Collected and analyzed data in the laboratories of Dr. Barry Scott and Dr. Murray Cox to understand the relationship between fungus and grass in New Zealand.

Honors Student — May 2009 – Oct 2010 — University of Ottawa

- Worked in the laboratory of Dr. Mona Nemer, current Chief Science Advisor of Canada, to understand heart development.

Research Intern — May 2008 – May 2009 — University of Ottawa

- Worked in the laboratory of Dr. Rees Kassen to understand bacterial and fungal evolution.

Education

Professional Development Certificate in Data Science & Machine Learning — 2018-2019 — McGill University

Studied the fundamentals of Data Science including statistics, business decisions, big data (Hadoop) and machine learning.

PhD in Neuroscience & Bioinformatics — 2011-2017 — McGill University

Developed an array of tools and scripts to understand brain cancer development using large amounts of genomic data.

Thesis: Understanding Mechanisms of Brain Cancer Tumourigenesis. McGill University. 2016.

Honors and specialization in Biochemistry — 2006-2010 — University of Ottawa

Collected, cleaned and analyzed diverse datasets to understand heart development.

Honors project: Cyclin D-GATA4 interaction in cardiac systems.

Miscellaneous

- Open Source contributions: GenPipes, RobusTAD, MultiQC, HICUP, MultiQC_C3G plugin, mugqic_tools
- Co-authored 11 peer reviewed scientific articles (Dali R in Pubmed)
- Recipient of several prestigious awards including the *Vanier Canada Graduate Scholarship*, *FRSQ doctoral scholarship*, *McGill Provost Graduate Recruitment Award,* and 3 *NSERC USRA* awards.
- Extensive research background having started in research and analysis in 2007.
- Multidisciplinary background: versed in data collection, as well as computational techniques in a wide range of fields (prokaryotes, viruses, plants, stem cells, human research, animal reseach…).
- Experienced in writing data analysis reports and project grants.