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. Also versed in statistical analysis and machine learning models.
- Python, R, Java, Bash, awk, sed, HTML, CSS, markdown, mySQL, Hadoop, WDL.
- 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 python pipelines as part of the GenPipes Framework for bioinformatics processing.
  - Developed a complete WDL analysis pipeline compatible with cloud processing.
  - Edited open source tools to add new functionalities including MultiQC and HICUP.
  - Set up GenPipes' automated daily testing/monitoring systems using Jenkins and worked on minimizing bugs and errors.
  - Lead a team to develop a quality control 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 2018-2020 and Google Season of Docs 2019.
  - Lead a team to develop and give workshops in bioinformatics, data analysis, quality control 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 brain development and disease.
- Developed RobusTAD, a tool to analyze chromatin insulation patterns crucial in understanding DNA 3D structure.
- 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. University of Ottawa. 2010.

Miscellaneous

- Various Open Source Code contributions*:* GenPipes, RobusTAD, MultiQC, HICUP, MultiQC_C3G plugin, muggic_tools
- Co-authored 15 peer reviewed scientific articles (Dali R in Pubmed bioRxiv, arXiv).
- 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 research…).
- Experienced in writing data analysis reports and project grants.

Reference available upon request