

Cathal King

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Summary

Bioinformatician currently working on a project collaboration with industry partners BD (Becton, Dickinson & Company). Developing a single-cell RNA-seq pipeline in a project that uses multi-omics to spatially characterise human colonic tumours. Values include integrity and quality as well as a focus on the natural environment. Familiar with shell scripting and working at the command line, among other scripting languages including Python and R. Have analysed modern NGS pipelines, have experience in library prep protocols also and an excellent understanding of microbiology. Have demonstrated excellence in all forms of communication, teaching, report writing and colleague collaboration in both an individual and team setting. Outstanding interpersonal skills and a drive for excellence. Have a keen interest in education and the biotech landscape in terms of medical technology, bioinformatics and associated products. Looking to apply novel skills in a new dynamic and exciting role.

Education

— Master of Science (MSc) - Computational Genomics

November 2018

National University of Ireland, Galway

GPA: 3.7/4.0

Main subjects:

•Genomics •Data Analysis •Bioinformatics •R •Python •Probabilistic Models • Microbiology

Thesis: *Genetic variants associated with chemo-resistance/recurrence in head and neck squamous cell carcinoma (HNSCC)*. Clinical somatic cancer variant calling on WES data from three HNSCC patients, with matched normal, tumour, and recurrence biopsies. Main computational tools used were GATK and Picard, SAMtools, Trimmomatic and maftools.

Projects included:

- Machine learning. Clustering techniques were used on a dataset of 7129 normalized gene expression profiles. A K-means analysis with a selection of input clusters was carried out to reveal something about the disease (cancer) under scrutiny. Three classifiers were trained (including a Support Vector Machine) to predict new biopsy data as correctly benign, incorrectly malignant etc.
- Analysed data from a ChIP-seq experiment looking at the regulatory role of a specific transcription factor in a human breast cancer cell line. A report was generated listing genome-wide binding locations, along with information on any potential regulatory role and a de-novo motif discovery analysis using MEME to confirm the binding motif and compare to known motif databases.
- Data Visualisation. Wrote a report which illustrates through appropriate visualisations the evidence supporting the hypothesis that the world population will stabilise at 9 billion people.

— Bachelor of Science with Education (BSc.Ed) - Biological Science & Physics

August 2015

University of Limerick

GPA: 3.2/4.0

Main subjects:

•Cellular & Molecular Biology •Science Mathematics •Ecology •Optics •Thermal Physics •Education

Thesis: *An Ecological Study of Loughrea Lake*.

Technical Strengths

Computer Languages

R, Python, Unix, BASH

Software & Tools

Tidyverse, SevenBridges, ggplot2, Seurat, DESeq2, GenomicRanges, HighCharts, Leaflet, D3.js, Plotly, Kallisto, bcftools, scikit-learn, GATK, GitHub, Nextflow & more

Experience

University of Limerick

Limerick, Ireland

Bioinformatician

September 2019 – Present

- scRNA-Seq analysis, demultiplexing cell barcodes, multi-seq, multi-omics analyses by layering in multi-dimensional data such as sequencing, histological etc. and liaising with industry colleagues at BD.
- Provide support, training and mentoring to students of bioinformatics.
- Authorship on upcoming bioinformatic methods paper.
- Setting up lab server, manage lab databases, high-throughput imaging analysis, cloud computing etc.

Trinity College Dublin

Dublin, Ireland

Bioinformatician

February 2019 – August 2019

- Data analysis of modern high-throughput genomics experiments such as ChIP-Rx and RNA-seq.
- Publication quality plots and bridging the gap between wet lab scientists and bioinformatics.

Eton Bioscience, Inc.

San Diego, CA

Lab Technician

September 2016 - September 2017

- PCR sample preparation, ligation, transformation, Direct Sequencing from Colonies and more in conjunction with ABI 3730xl Sequencer Machine and liquid handler for a service based biotech company.
- After a successful probationary period, I began Quality Control and basic Data Analysis of sequenced data by examining chromatograms and sequencer raw output by using various software programmes.

Coláiste Naomh Cormac, LOETB

Offaly, Ireland

Secondary School Physics and Mathematics Teacher

August 2015 - June 2016

- Designed and implemented lessons to a high standard, while collaborating with other science teachers.

Loreto College Foxrock

Dublin, Ireland

Secondary School Physics and Applied Mathematics Teacher

September 2018 – December 2018

Attitude/Attributes

- Exploratory data analysis and QC on a variety of data types and projects.
- Generate powerful visualisations including interactive visualisations in web browsers.
- Excellent communication and public speaking skills developed through teaching experience.
- Have the ability to make complex concepts understandable. Engaging presentation slides.
- Experience with cloud infrastructure for data analysis such as SevenBridges and AWS.
- Great Networking skills and an appeal to industry / entrepreneurship.

Extra-Curricular

- Video editing. Have a library of video footage (including 4K video) on various themes.
- Hurling (Irish Sport). Play at club level and previously with St. Peters Hurling of San Diego.
- Surfing. Enjoy surfing at various surf spots.
- Chess. Play for recreation with friends / family.

References

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