Alexander Turco

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Summary

University student attending McMaster University, pursuing a degree in the field of Biology with a focus on Bioinformatics, as well as a keen interest and strong programming skill set. Seeking to apply my analytical and creative problem solving skills to enhance data extraction, transformation, and presentation.

Work Experience

Undergraduate Research Assistant, McMaster Faculty of Science May 2022 - Aug 2022

- Created a scientific poster highlighting the research conducted and presented at the McMaster MacWater: Challenges in Water Monitoring Conference held in October 2022.
- Focused on using bioinformatic techniques to better understand microbial compositions of freshwater algal bloom sites across Ontario in order to monitor water quality.
- Analyzed and manipulated DNA sequence data collected by the Ministry of Environment and Climate Change (MOECC) to understand the toxicity of Cyanobacteria.
- Member of Dr. Brian Golding's Lab.

Royal Bank of Canada - Operations Maintenance and Funding Specialist May 2019 - Aug 2021

- Developed a simple Python program to facilitate incentive calculations which was utilized by the Operation Centre teams to reduce errors and improve client satisfaction.
- Processed Client funding requests of automotive loans for auto dealerships across Canada
- Maintaining client files to support regulatory compliance.
- Maintained a high-volume throughput using incentive calculations and evaluated interest rates while ensuring a low error rate to maximize dealer satisfaction.

Whole Foods Market - Grocery Team Member Jun 2018 - Jul 2019

- Assisted clients on the floor and keeping shelves stocked.
- Obtained training and remained updated on specialty products to maximize the customer experience while in store.

Projects

Cells at War: An Immersive Scientific Video Game Link to Demo

Presently collaborating with a group of Biology undergraduate students and supervising professors towards the development of an innovative and immersive biological video game that can be utilized alongside lecture material to improve student engagement and motivation in the classroom. Its primary purpose is to create an interactive game that teaches students about the molecular basis of diseases such as Diabetes and Pompe Disease. Implemented the game in first year Biology classrooms at McMaster University in 2022 and 2023.

Cells at War has been an interdisciplinary project together with students and faculty from the Game Design Program at George Brown College. During this project, I was invited by the George Brown College programming students to join them in creating rough, testable builds and troubleshooting the game as we worked towards the final polished build. The game has gained traction and funding has continued in order to get this project to the global level. This project was also used for a fourth-year undergraduate thesis project which focused on the impacts of bringing game-based learning approaches into university classrooms, and was presented at the McMaster Biology Undergraduate Conference.

Web Portfolio [Link to Website]

Personal website developed using Javascript, HTML, and CSS. This site highlights personal information, special projects, personal areas of interest and what I am most passionate about. This is an ongoing project that not only showcases my work but reflects my professional self in a creative way.

Undergraduate Thesis: Simulating Low Complexity Region Evolution [Link to GitHub]

Working in a bioinformatics lab under the supervision of Dr. Brian Golding. For my undergraduate thesis, I am exploring how to estimate evolutionary parameters such as mutation rates and indel rates of protein low complexity regions using an analysis called an approximate bayesian computation (ABC). This analysis is rooted in Bayesian statistics and it essentially translates into an algorithm. Using C++, I developed a program to simulate the evolution of low complexity regions and used it in a secondary program I developed for an Approximate Bayesian Computation Markov Chain Monte Carlo algorithm, in order estimate a small number of parameters that can accurately describe how Low Complexity Regions evolve. This project was presented at the McMaster University Biology Undergraduate Conference.

EDUCATION

2019 - present	BSc (Biology, Research Specialization) at **McMaster University**
2015 - 2019	Ontario Secondary School Diploma **St. Augustine CHS**

SKILLS

Research	Data collection, manipulation, and analysis, Data presentation, Microsoft Office
Programming and High Performance Computing	Python, C++, R, LaTeX, Git/GitHub, Unix/Linux, Bash
Soft Skills	Collaboration, teamwork, communication, drive to impact, highly organized, creative problem solver, highly adaptive, detail-oriented

VOLUNTEER EXPERIENCE

Coach - Little Kickers Group

- Coached children ages 2-6.
- Developed a variety of activities (warmups, drills) to actively engage the children and introduce them to sport and physical activity.

Children's Sport's Volunteer - YMCA

- Created and ran a variety of cooperative games and sports programs.
- Responsible for leading large groups of children ages 7-10 years old through these activities.

AWARDS, STIPENDS, GRANTS

- McMaster University: Undergraduate Biology Conference Oral Presentation Award for Computational Biology (Apr 2023)
- McMaster University: Undergraduate Biology Conference Oral Presentation Award for Science Education (Apr 2023)
- McMaster University: MacWater Challenges in Water Monitoring Conference 3rd Place Best Abstract Award (Oct 2022)
- CEWIL Canada: Research stipend for the creation of Cells at War $4000.00 (Sep 2021 - Present)

Activities

- Intramural Soccer McMaster University
- BEAP (Bioinformatics, Evolution, Anthropology, and Population Genetics) weekly seminar McMaster University
- HOSA Future Health Professionals Conference Attendee 2019
- Ski and Snowboard Team YCDSB 2017-2019
- Competitve Soccer Player 2013-2018
- Member of High School drama club