Connor Braun

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Statistics Canada - Statistical Integration Methods Division
150 Tunney's Pasture Driveway
Ottawa, ON, K1A 0T6 Canada

Re: Junior Statistician-Mathematician (Job Posting ID: 93387)

Dear Hiring Manager,

I am writing today to express my interest in the Junior Statistician-Mathematician internship, which I discovered on the University of Calgary's Science Internship job posting website. As an undergraduate researcher and student of mathematics and neuroscience, I am passionate about the creative application of math to solve problems and improve the lives of others. Contributing my skills to the process by which knowledge is discovered and shared is an exciting prospect, but I also feel strongly aligned with the goal of informing people – keeping our society transparent and empowering voters and organizations to make informed decisions. Research projects have required that I develop my statistical and progamming knowledge well ahead of coursework, so I expect to be a valuable assistant both for my years of experience solving real problems and for my ability to understand and apply complex ideas.

As an undergraduate researcher, I have been fascinated by synchronization phenomena. I have spent the last 3 years completing projects aimed at modeling and analyzing neural systems exhibiting synchronization using Python. Over my experience I have become comfortable manipulating time series, processing signals and understanding dynamic systems theory. This work culminated in an honours thesis project, where I developed a new algorithm and nonparametric statistical test to quantify neuronal dynamics. The project was highly independent, requiring that I learn how to model thousands of neurons in parallel, interface with computing clusters using Bash and construct effective visuals to convey my process and results. Ultimately, I demonstrated that the algorithm was robust to type I and type II error over a broad domain of parameters and used it to produce evidence that a neural phenomenon thought to only occur in one behavioral context actually occurs in others. While the work was rarely easy, it was never discouraging. Currently, I am developing a deep neural network to perform a similar analysis on neural time series, and I hope to make machine learning the centerpiece of my career going forward.

My work has made me proficient at programming and working with data, but I also excel as a student and teammate. I have maintained a 4.00 grade point average over my entire education, which I attribute to my love of learning. I also took part in a rapid prototyping competition called NeuroNexus, where I coordinated my team and contributed to the development of a neural network designed to predict seizure onset in epileptic patients. I strongly value effective teamwork and communication, and I became excellent at both during my time as a practicing paramedic. Futhermore, my professors and colleagues consider me personable, motivated and easy to work with.

Overall, I believe that my skills, experience, personability and values make me a good fit for the Junior Statistician-Mathematician internship. To address the screening criteria: I am enrolled in the University of Calgary's Science Internship Program, am a mathematics major, have taken more than two statistics classes, am competent with a programming language and am fluent in English. I welcome the opportunity for a technical interview, and would work remotely or consider relocating to Ottawa. Thank you kindly for your consideration, and please feel free to contact me at the number or email address listed at the top of this letter.

Sincerely,

Connor Braun