

Ross Andres

BIOPHYSICS · MACHINE LEARNING · MATHEMATICAL ANALYSIS

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My goal is to be at the forefront of physics research, heavily using mathematics and computer science. I enjoy working in teams and aspire to work in a big project with other amazing scientists.

Education

McGill University B.S. Honors Mathematics and Physics

ITESM Santa Fe High School Degree/IB Diploma (3rd out of 507 students; Graduated with Honors)

Skills

Programming Python, JAVA, MATLAB, LaTeX, basic HTML

Languages English, Spanish, and working proficient French

Analysis parameter reduction, differential equations, use of cost functions, signal analysis, statistical analysis and machine learning.

Experience

The Ottawa Hospital (Prof. Eric Vandervoort)

Ottawa, Canada

MEDICAL PHYSICS RESEARCH POSITION

May – September 2018

- “Predicting CyberKnife tracking errors from external breathing features”
- Used machine learning techniques to predict errors generated by the CyberKnife treatment for liver cancer patients.
- Coded a real time interface for adaptive breathing control for patients to use during treatment.
- Used signal processing techniques, statistical analysis and machine learning as well as python coding.
- Spent most time looking for significant features and documenting and making the codes robust for use by others.

Dr. Paul François (McGill university)

Montreal, Canada

BIOPHYSICS RESEARCH POSITION

May – September 2017

- “Exploring the use of Mutual Information as a Fitness Function for Parameter Reduction”
- Carried out my own research project.
- Simulated the immune system in Python through differential equations and linear algebra.
- Explored the use of the Mutual Information as a function to simplify complicated biological networks.
- Spent most time programing, debugging and mathematically analyzing the results.

Honors & Awards

INTERNATIONAL

2017 **SURA**, Science Undergraduate Research Award (funding for research)

Montreal, Canada

2016/2017 **Scholarship**, One-Year Undergraduate Entrance Scholarship McGill

Montreal, Canada

2016 **Scholarship**, Hugh Brock Renewable Scholarship McGill

Montreal, Canada

Extracurricular Activity

2018 **MCHAM**, (McGill Children's Health Alliance Montreal) volunteer

Montreal, Canada

2018 **Running**, Timed 5 km race best time: 19:12 min

Montreal, Canada

2018 **McGill Physics Hackathon**, improving neural networks with inspiration in immunological networks

Montreal, Canada

2017 **McHacks**, McGill Organized Hackathon, submitted a Facebook chatbot as project

Montreal, Canada

2017 **CUPC (Canadian Undergraduate Physics Conference)**, Gave talk on independent research project

Montreal, Canada

2016 **Beyond Me**, mentorship program for children with disabilities

Montreal, Canada

2016 **3rd Place**, McGill Engineering Competition junior Design

Montreal, Canada