

# Ross Andres

BIOPHYSICS · MACHINE LEARNING · MATHEMATICAL ANALYSIS

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## Objective

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