ANJA KROON

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SUMMARY

Fourth-year honors Electrical Engineering student at McGill University in Montreal, Quebec, Canada applying to MS/PhD programs in the US and Europe for electrical engineering. Research interest areas include machine learning and signal processing applied to medicine, biology and communications. Past research experience has resulted in a published paper presented at IEEE ISCAS 2022. A research project in comparing pitch detection algorithms has been published on Arxiv and code available on GitHub. Currently conducting my honors EE bachelor's thesis in evaluation methods for generative models with an application in generative proteins sequence modeling. which will then be tested on genome sequencing algorithms.

EDUCATION

B.Eng. Honours Electrical Engineering, McGill University, Montreal, QC
September 2019 - May 2023 *GPA 3.66*
Varsity Alpine Ski Team, 2019-2021
Advised by Professors Boris Vaisband, James Clark, Douglas O'Shaugnessy, and Mark Coates. Honors bachelor's thesis conducted with Prof. Mark Coates. Graduate coursework includes signal processing, numerical methods, optimization, machine learning, probability, and speech communications.

EXPERIENCE

DUST Identity, Boston, MA
Electrical Engineering Intern — May - August 2022
Developed the new version of DUST's integral product, a hand held tag scanner in conjunction with a mechanical engineering team. ARM microcontroller-based system rapidly focus-stacked images for high-security tags. Development included engineering a custom PCB with KiCAD, control system, embedded firmware design, connection to the API with bash scripting, and electrical documentation. Delivered a product with 9 times lower cost with 2x faster tag scanning capabilities.

McGill University Machine Learning and Signal Processing Lab
Research Assistant — May 2022 - Present
Research under the supervision of Prof. Mark Coates and with PhD student Florence Regol on statistical-based evaluation methods for generative models applied to biological sequencing. Paper currently in progress for Fall 2022 submission.

McGill University Center for Intelligent Machines
Research Assistant — January - April 2022
Research under the supervision of Professor James Clark and PhD. student Fay Askari on the development and training of a key point detection machine-learning algorithm to identify penalties in NHL tapes.

McGill University Photonics Systems Group
Research Assistant — September - December 2021
Research under the supervision of Professor David Plant and PhD student Weijia Li simulating a Mach–Zehnder interferometer, a silicon photonics device, using Lumerical.

McGill University Heterogeneous Integration Knowledge Team
Research Assistant — May - Aug 2021
Research under the supervision of Professor Boris Vaisband and PhD student Yousef Safari on engineering power delivery topologies for a novel system-on-chip-like-system-on-wafer, an application-specific integrated circuit (ASIC) currently being engineered by UCLA, Georgia Tech, and McGill. Paper published in IEEE International Symposium for Circuits and Systems (ISCAS May 2022).

PUBLICATIONS

Anja Kroon, "Comparing Conventional Pitch Detection Algorithms with a Neural Network Approach"
Research project in ECSE 523: Speech Communications with Prof. Douglas O'Shaugnessy. Presented to course. April 12, 2022.
https://arxiv.org/abs/2206.14357

Yousef Safari, Anja Kroon, and Boris Vaisband, "Power Delivery for Ultra-Large-Scale Applications on Si-IF"
Paper and poster at IEEE International Symposium of Circuits and Systems (ISCAS) May 2022.
https://arxiv.org/abs/2208.13034

AWARDS

Diane Ferguson Involvement Award
Summer 2022. Awarded by McGill University.

EUS Departmental VP of the Year
Spring 2022. Awarded by Engineering Undergraduate Society of McGill Uni.

Summer Undergraduate Research Award in Engineering
Summer 2021. Awarded by McGill University.

Principal's Student-Athlete Honour Roll
Spring 2021. Awarded by McGill University.

Tomlinson Engagement Award for Team Mentoring
Fall 2020. Awarded by McGill University.

SKILLS

Proficient in: Python, NumPy, Bash scripting

Familiar with: Tensorflow, WireShark, Simulink, KiCad, Solidworks, Spice, Java

VOLUNTEERING

President of the Electrical, Computer, Software Engineering Student Society of McGill University, May 2022 - April 2023
Represented 1200 students of the Electrical and Computer Engineering Department to McGill University Faculty of Engineering regarding issues relating to student rights, student safety, and future program plans.

Vice President Academic of the Electrical, Computer, Software Engineering Student Society of McGill University, May 2021 - April 2022
Represented 1200 ECSE students across 12 committees involving professors and administrators to improve the curriculum, course offerings, and lab work. Communicate violations of student rights to McGill University panels.

Vice President Academic of Sustainability in Engineering at McGill, May 2020 - April 2021
Worked to integrate SEAD (Sustainability in Engineering and Design) courses into the various engineering curricula as technical electives. Organized sustainability-related events with TISED (Trottier Institute of Sustainability in Engineering and Design).

Chapter Secretary, Kappa Kappa Gamma Women's Fraternity, January 2021 - December 2021
Responsible for recording and distributing meeting minutes. Manage alumni relations and official correspondence with headquarters.

Ski Trip Coordinator, Engineering Undergraduate Society of McGill University, June 2021 - March 2022
Worked with a team of 5 other coordinators to logistically plan, promote, and execute a three-day ski trip with 50 engineering students.

Vice President Events of the Engineering Undergraduate Society Junior Council of McGill University, September 2019 - August 2020
Coordinated a team of 20 students to plan events for up to 3,000 students collaborating with external venues in both French and English. Directed marketing campaigns, supervised budgeting, managed external relations, and event planning teams.

MENTORSHIP

Promoting Opportunities for Women in Engineering, McGill University, July 2020 - Present

ECSplore Mentorship Program, Electrical, Computer, Software Engineering Student Society of McGill University, July 2020 - Present

LANGUAGES

Fluent: English, German, Dutch

Basic: French, Spanish, Latin

HOBBIES

Skiing really fast, hiking, mountain biking, piano and paddle boarding

FUN & RANDOM TIDBITS

I used to be a semi-professional ski racer and attended two schools at the same time while traveling the world for ski races.

I organized the first and second ever prom at a school with an average graduating class size of 10, writing contracts, delivering budgets, and managing a team of 6 organizers.

I love politics and world news and have read the New York Times every day for the last 8 years.

I play piano and have learned to play the songs “Firework” by Katy Perry and “Diamonds” by Rihanna entirely by ear.