

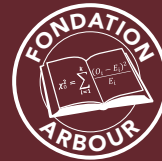
The more enlightened men are,  
the more free they will be.

Voltaire



FONDATION  
ARBOUR

*Sapere aude!*





*“Throughout his life, Pierre recognized the key role higher education played in stimulating Québec’s economic development and competitiveness. His Foundation will continue on his legacy by encouraging success in higher education in Québec.”*

Philippe Arbour, Pierre’s son and Chairman

## CREATION OF THE FOUNDATION

The Arbour Foundation was created as a result of Mr. Pierre Arbour donating all of the shares of his private company, Alkebec Inc., valued then at \$9 million in 2005. Created December 30th, 2005, the Foundation operates under article 149(1)(f) of the Income Tax Act.

## THE FOUNDATION’S MISSION

The mission of the Foundation is to grant scholarships to deserving students in financial need at the Master and Doctorate levels in three disciplines having been identified as most likely to foster economic growth: Engineering, Computer Science and Business Administration.

## THE FOUNDATION’S SOLEMN DECLARATION ENDORSED BY SCHOLARSHIP RECIPIENTS

*“I will strive to act with honesty and integrity while respecting human rights and dignity. I will strive to create sustainable prosperity and I will oppose corruption and exploitation. As I hold true to these principles, I will establish for myself, peace of mind and a righteous reputation.”*



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### CREDITS

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## OURS VALUES

### PREAMBLE

The Arbour Foundation is committed to financing and backing deserving students who possess a combination of praise-worthy intellectual and moral qualities, whilst also giving consideration to difficulties which may have been overcome by applicants.

The Arbour Foundation is committed to defending Enlightenment values and principles exemplified by the sharing of knowledge, the elevation of reason, the promotion of science and humanism.

We believe that the principles underpinning the Enlightenment are axiomatic and are pillars for quality education, transcending both time and borders. The Arbour Foundation encourages its university partners to defend these principles.

The Arbour Foundation also encourages students in their discovery of the Enlightenment principles by carefully considering and reflecting on the Foundation's statement of values.

### OUR STATEMENT OF VALUES

#### VALUE 1: DIVERSITY OF OPINION / FREEDOM OF SPEECH AND EXPRESSION

##### The Arbour Foundation:

- Believes that every individual should have the right to express his or her opinions and is justified in standing up to those who attempt to suppress debate. A corollary to freedom of speech is the right of people to hear the ideas of others, in order to be able to form nuanced opinions based on hearing multiple and divergent arguments;
- encourages people to actively engage in good-faith discussion, civil debate, and conversation to foster understanding and to flesh out areas of knowledge which require further elaboration and debate;
- promotes scientifically minded dialogue which aims to rank-order competing claims based on the strength of objective analysis;
- considers that all domains of knowledge and scientific enquiry lead to a better understanding of the human condition and complex phenomena;
- endorses the adoption of the **Chicago Principles**. According to these principles, no debate should be suppressed on the basis that ideas are “disagreeable, offensive, unwise, immoral, or wrong-headed”; and
- believes that people should be respectful of others' choices so long as such choices do not impede on the personal choices or the liberty of others.



## VALUE 2: A COMMITMENT TO RATIONAL THOUGHT

### The Arbour Foundation:

- Encourages secular, logical, objective thought and its systematic application in an impartial and disinterested way with the aim of uncovering the truth and of discerning facts from ideology, which will almost inevitably interfere with the quest for the truth;
- believes that reason and knowledge based on a scientific rank-ordering of competing claims must prevail over ideology, and that knowledge must never be suppressed. An attempt should be made to fine tune ideals to reflect the facts, including a fundamental human nature, as well as the practicalities of everyday life;
- supports the use of the scientific method and proposes the adoption of a Bayesian approach which seeks to incorporate new information to refine formulations, ideas and to improve theories, and to discard discredited or false ones, with the aim of improving the body of knowledge. We are agnostic to results whether consistent with a priori expectations; and
- believes that every field of study that is capable of evaluation under the scientific method must be prepared and willing to submit its claims and premises to empirical testing.

## VALUE 3: A JUDICIOUS APPLICATION OF KNOWLEDGE

### The Arbour Foundation:

- Encourages individuals to use discovered truths and facts wisely, and apply themselves to solving problems with the objective of improving the human condition as well as the world in which we live;
- encourages individuals to recognise that changes in the status quo inevitably lead to trade-offs. The scientifically-minded approach is to identify and quantify such trade-offs and carefully consider the law of unintended consequences; and
- encourages critical thinking to avoid policies and plans which may appear well-intentioned, but which are not backed by the latest scientific findings and body of literature.

## VALUE 4: INDIVIDUAL RESPONSIBILITY, MERITOCRACY, AND EQUALITY OF OPPORTUNITY

### The Arbour Foundation:

- Judges the individual on merit, independent of characteristics such as ethnicity, gender or religion;
- believes that each individual should assume personal responsibility and must act based on freewill. We hold that intent is demonstrated through action;
- believes that concerted efforts must be made to remove obstacles that stand in the way of the principles of free choice and equal opportunity; and
- believes that the pursuit of equality of outcome is incompatible with the principles of equality of opportunity and meritocracy.



## A WORD FROM OUR CHAIRMAN



Since my father passed away in July 2018, we have made great progress in respect of professionalising the infrastructure of the Arbour Foundation to ensure its longevity and continued success: (1) we have updated the rules and statutes, with the objective of enshrining Pierre's wishes; (2) we strengthened the operating team with the creation of the role of Chief Executive Officer, as well as the governance structure, whose decision-making is now guided by relevant key performance indicators; (3) we created a finance committee as well as an investment policy statement which will assist in monitoring the Foundation's assets under management and the selection of wealth managers; (4) we have undertaken work which aims to restore a better balance in awards between MSc, PhD and MBA programmes; (5) we have created and adopted a scorecard with clear criteria for evaluating potential scholarship recipients, which now include a proportion of foreign students who have expressed the serious desire to make Quebec their home after graduating; (6) we have launched a partnership with Mitacs with the aim of encouraging scientific entrepreneurship as well as having put in place other initiatives that encourage entrepreneurship more generally; (7) we have launched several partnerships with a number of companies in the private sector with the objective of offering internships to select Arbour Foundation scholars; and finally and very close to my heart (8) we have adopted a series of values which encapsulate the DNA of the Arbour Foundation.

The Foundation's values were inspired by the legacy values of the Age of the Enlightenment ("the Enlightenment"), more specifically the application of knowledge and reason to combat all things irrational or arbitrary, as well as ignorance and superstition.

The legacy values of the Enlightenment include the furtherance of individual and collective rights, the sharing and transmission of knowledge, and ultimately humanism. The Enlightenment aims towards progress and seeks answers to problems that beset humanity. Particularly in an educational context, the values which underpin the Enlightenment are axiomatic and are pillars that are timeless and transcend borders.

In sum, the Arbour Foundation (1) defends the right of freedom of speech and expression, and open discourse and scientific enquiry and expects that its university partners will do the same; (2) privileges rational and scientific thought to distinguish fact from ideology which has no place in a university or academic setting; (3) endorses the careful and judicious application of knowledge to solve problems facing humanity, always taking into consideration possible trade-offs when altering the status quo; and (4) believes in equal opportunity and meritocracy, and is against systems which attempt to engineer arbitrary or

pre-conceived results, or which place primary selection weightings on characteristics which are not linked to the personal or intellectual competence of individuals.

These values will continue to guide the selection of our scholars – those most deserving students – as well as the university partners that we choose to work with, in perpetuity.

The 2019/2020 academic year is truly a tale of two halves. We started the year in a very normal fashion following the selection of 38 scholars, representing an acceptance rate of 62%, for a total philanthropic expense of \$488,500.

During the month of December, the Foundation co-sponsored a networking event on artificial intelligence with Ruben Caballero, ex-VP of engineering at Apple, as the keynote speaker. During the same month, we also awarded the two very first and highly prestigious Pierre Arbour honorific prizes, having a value of \$15,000 each, in memory of my father.

And only a few months later, how the world has changed. As I write you this letter (end of May 2020), about a third of the world's population is under lockdown because of the Covid-19 pandemic. Confirmed cases are now well in excess of 5.5 million, including 350,000 dead. The emotional impact for affected families is not doubt enormous.

The global nature of the pandemic represents a new phenomenon to most, except for a few rare centenarians who were young children during the Spanish flu pandemic, which is believed to have infected 500 million people and killed about 10% over a two-year period. Those who are interested in history will already know that from a mortality standpoint, Covid-19 is relatively benign. That said, Covid-19 has turned into a global pandemic in a very short period of time, not only because of its infectiousness, but because of the much higher rates of urbanisation and ease of global travel for individuals, particularly given that about a third of infected people are asymptomatic.

The other major difference relative to 1918 is that around 100 democracies exist today, compared to about 22 a century ago. But the fact that 1/3 of the world's population is or has been required to undergo some form of lockdown does not signify a regression in the domain of personal liberties, but rather is testament to the fact that human life has never been valued so highly. The statistics are supportive of this claim: for a representative democratic country such as the United Kingdom, data from Imperial College in London suggest that cumulative mortality rates for people under the age of 70 years is approximately 0.35% (35 people for every 10,000 infections), which increases to ~0.70% for people of less than 80 years, and 1.0% overall (which compares to a mortality rate of ~10% in the case of the Spanish flu, and 15% for SARS in 2003-2004). This makes Covid-19 approximately 7-10x deadlier than seasonal influenza, though Covid-19 mortality is heavily skewed towards patients in advanced age categories and who have underlying health conditions. I would like to point out that the cumulative mortality rate for the working age population (i.e. less than 60 years of age) is approximately 0.11% (11 people per 10,000 infections).

Despite the relatively modest mortality rate, democratic forces and political pressure that we often take for granted have helped ensure that elected governments, in a first instance, have pursued measures that are focused on the preservation of life. And in the case of non-democratically elected countries such as China, it is a combination of the desire to maintain access to international capital markets, trade relations as well as international pressure, which become major driving and protective forces in favour of a preservation of life strategy. The other rather utilitarian incentive for all governments has been the desire to “flatten the curve” to protect healthcare systems from being overwhelmed.

At the same time, the trade-offs are enormous, and weigh more with each passing day: in just over a month since the lockdown began, nearly 15% of Americans lost their jobs (an increase of 25-30x over February 2020 levels), overtaking the 2008-2009 global financial crisis both in speed and depth, as well as the 1983 crash, and we are now predicting achieving levels which have not been seen since the Great Depression of the 1930s. On the other side of the Atlantic, the UK is facing the prospect of the worst recession in 300 years. The magnitude of the economic impact is similar elsewhere around the globe. The reader must understand that millions of firms of all sizes will have generated revenues of zero (or at the very

least massive reductions in revenues) since the second half of March 2020, and these low revenue levels will continue until governments decide to relax lockdowns. But even when this happens, the economy will only start to mend once consumers build up their confidence to be able to recover normalised routines of daily activity, putting consumer spending back on a predictable trajectory. Meanwhile, Covid-19 has translated into a liquidity crisis for most companies, which have had to take urgent action to reduce their cost bases in order to preserve cash and to delay being required to call in liquidators due to an inability to pay creditors and bills (e.g. salaries, rent, etc.) as they fall due. At the risk of stating the obvious, the current economic crisis is therefore not rooted in structural excesses that normally precede recessions, such as excess corporate leverage and bad loans by retail and commercial lenders, as was the case in 2006-2007. It is rather the actions of governments that have caused a very severe synthetic recession.

Although governments have imposed lockdown measures with devastating economic consequences, many of them have at least attempted to assume their share of responsibility: governments including those of Canada, the United States, the UK and others, have proposed a series of liquidity alleviation measures and financing schemes worth tens of trillions of dollars – systematic interventions of a magnitude that the world has never seen before. For instance, many governments (and hence the taxpayers of the countries in question) have agreed to assume 75-80% of employees' salaries (up to a certain relatively modest total salary threshold) during an initial 3-month period (initially ending during the summer of 2020, but now with the possibility of further extensions) and we have also seen corporate lending schemes which are backed by governments – all intended to extend liquidity to firms in need. These programmes may be required to be extended for those countries who believe that they are able to afford them.

But the longer the lockdown goes on, the greater the number of companies that will have burned through their liquidity reserves, and this despite dramatic cost savings measures which will already have been implemented; and many businesses will ultimately be forced to pull the plug on their operations. This will inevitably lead to skyrocketing unemployment rates and with every passing day, we are not only facing the deepest recession in modern history, but a further subsequent period of austerity to rebalance the books and repay government interventions designed to absorb corporate debts and losses until virus mortality curves could be flattened. Recessions are accompanied by severe hardship as well as secondary and tertiary consequences which can be difficult to predict. We must do everything in our power to soften the blow, and this will require the identification of a very sophisticated and balanced approach to get out of the lockdowns as soon as possible and to reboot the idea of a normal functioning society.

In times of war, we must come together to fight the enemy. In this crisis, there are two main enemies, both invisible: a very contagious virus on the one hand, and a possible economic depression on the other. In the short-term, the virus is the more threatening foe. Over the longer term, the economic consequences of a deep recession are likely to be much more damaging.

What is absolutely certain is that we are living an extraordinary period which will no doubt have its own chapter in the history books. In the financial markets, Covid-19 is known as a black swan. To all students as well as our scholars, this is a period of great uncertainty and anxiety. Whether one is a student or on the job market, we are all in the same boat and we all wish to revert to more normal times and to live in a way which resembles the life that we had all grown accustomed to. To our scholars in particular, I wish to reassure you that we are here to help during these uncertain times. That said, as future leaders, researchers, entrepreneurs and inventors, I wish to remind you of your responsibility during the current crisis, and that mankind is counting on your personal contribution and your expertise to find sophisticated solutions to safely get us out of the lockdown which is eating away at the fundamentals of our economy, our society and our future.

The mission of the Arbour Foundation remains to encourage deserving students in domains which we consider conducive to economic growth of the province of Quebec. Without economic growth, it is difficult for the Foundation to fulfil its

mission, and to continue to provide help in the same magnitude as seen in prior years. We need economic growth and a functioning economy, to absorb graduates— the intellectual capital – that we are financing.

As of early May 2020, there were no less than 115 vaccine candidates under evaluation across the globe – and the level of cross-border cooperation between scientists has never been so high. There are also several therapeutic treatments that, if proven, could further reduce mortality rates. That said, the most optimistic teams believe that a vaccine may be approved by September or October 2020 (though most scientists still believe that a vaccine is at least 18 months away). But it is not yet clear whether vaccination may offer the desired levels of inoculation. Even in the most optimistic of cases, billions of doses will need to be manufactured, which will take time. The consequences of such a prediction are as follows: governments and taxpayers do not have sufficiently deep pockets to continue to prop up companies that are running out of cash, at least without incurring dangerous levels of debt. We therefore need to act now to avoid an economic disaster.

For starters, we need to examine the actions of affected countries and to learn empirically where we can. Mass-testing and tracing seems like a good starting point: people who are confirmed to be negative (or those who have acquired an immunity following a prior infection) and who are not at risk should be able to return to work and to practice social distancing and good personal hygiene, all in a bid to get the economy moving again.

But this is only a starting point. We therefore urgently need the expertise of all to find solutions to the various problems presented by Covid-19 and to allow economic activity to resume, while ensuring that we do not put lives unnecessarily at risk ahead of a vaccine becoming available. We must unfortunately acknowledge that we will need to reach an unsatisfactory and imperfect balance between preserving life on the one hand, and the economy and civil liberties on the other. There is more than one side to the story.

As Bill Gates had predicted in 2015, pandemics represent one of the biggest threats to modern living. We no longer have any excuses to ignore the issues of prevention as well as planning. Covid-19 is merely one of many future pandemics, and we urgently need to come together to improve our responses to such spontaneous and devastating events, as the rather extreme lockdown measures that we have just witnessed cannot be the default solution irrespective of the severity of a pandemic, particularly when the cumulative mortality statistics for the working age population is 0.11%.

I would encourage all of our scholars to think about the areas in which they might be able to help. There are hundreds of projects that our scholars can get involved in to try to get us out of this crisis. The manual on pandemics needs to be updated for future generations to come and each one of you has an opportunity to become a co-author.

In times of war, we need to make our contribution towards the eventual victory, which in the present situation means fighting for the life we have all become accustomed to, which itself is the product of a battle against pestilence, tyranny, ignorance and entropy over the course of thousands of years. The war effort is a collective act, but the game changers arise from the actions of talented individuals.

We are therefore calling on individuals to make their contribution and to come up with solutions that will serve to limit the impact of Covid-19, and in the process to pursue the Enlightenment values in a bid to find a path back to a life worth living and to co-author the “how to” pandemic manual of the future.

**PHILIPPE ARBOUR**





## A WORD FROM OUR CHIEF EXECUTIVE OFFICER



Dear Friends,

2019 has been a good year for the Arbour Foundation. I am particularly proud of the creation of a real Arbour community among our achievements, as well as our improved selection process and investment policy, as mentioned by our Chairman earlier:

Let me first welcome Joëlle Dorais as the Foundation's new Executive Assistant. Since her appointment, her contribution has been significant. I am delighted to count on her cheery and positive attitude! Our family has grown even more with the addition of Hussein Slim (Scholar 2018) as Communications Advisor and Émilie Thibault (Scholar 2018) as Public Relations Advisor. I would like to thank them for their work and commitment. Together, we have applied ourselves to promoting the Foundation and building the Arbour community.

Although the Foundation has been distributing scholarships for the last 15 years, it has not been easy to bring together all our scholars to create a sense of community. Our purpose is well-defined: develop a solid network of past and present scholars who will support each other in their professional careers. In our complex and interconnected world, a key for the professional and personal success of our scholars is to establish and maintain a vast network of contacts. The Foundation wants to be the catalyst to set the basis for such a network, especially for our international students who come to Québec with a limited set of contacts.

To expand our offer beyond scholarships, we put ourselves to task and created opportunities for our scholars. We hosted two large networking events on the topics of entrepreneurship and artificial intelligence with some 400 participants (students, teachers, professionals, university delegates) to create an opportunity for our scholars to forge new links among themselves and with leading experts.

We have also strengthened our Mentorship Program. Close to one third of our scholars have had the opportunity to take advantage of this program that provides personal and professional guidance and allows them to shine even more in their activities. Some participants even found jobs or internships in prestigious organizations. Every year, we conduct an anonymous survey and this year's results are even higher than last year. You can read the comments from some mentees later in this report where they corroborate the importance of this program.

With the same goal in mind – to create opportunities for our scholars – we are happy to report that we are finalizing agreements with large organizations to offer paid internships to selected candidates. These two-year internships could evolve into full-time positions, should this be agreeable to both parties. These internships would not only supplement our scholarships and enhance the students' resumes, but, especially for our Ph.D. students, would represent a wonderful opportunity to enter the business world while finishing their studies. There is still a gap between the academic world and the business world: these internships are one way to bridge the gap. They should be prioritized to maximize the contributions of university research to society in general.

To further enhance the actualization of academic research in today's society, the Foundation has broadened its activities to include entrepreneurship financing for university technological research. Although the ratio of start-ups from tech research is around 10% in Boston, it is barely 1% in Montreal. This prompted us to sign an agreement in 2019 in the Accelerate Program of Mitacs, a national, not-for-profit organization. Mitacs has designed and delivered research and training programs that support industrial and social innovation in Canada for 20 years with hundreds of millions of dollars of funding from all government levels. This program provides \$15,000 in funding to start their business. More recently, the Foundation has tightened the selection process by choosing only those students who have successfully completed the Québec Scientific Entrepreneurship Program (QcSE) which offers on-line training to learn what it takes to found and run a company.

I am also pleased to announce our first winners of the Pierre Arbour Honorary Award worth \$15,000. This award named after our founder, Mr. Pierre Arbour, highlights the excellence and extraordinary journey of students who exemplify the values of the Fondation Arbour. Émilie Thibeault and Marcel Kaufmann, both Ph.D. students at Polytechnique Montréal, are the first recipients of this award and proudly represent the Fondation Arbour. We count on them to be the leaders of the Arbour community, now and for years to come. You can read their bios in the next pages.

Although this annual report serves to showcase 2019, it is almost impossible not to mention the beginning of 2020. Indeed, Covid-19 has propelled us in the unknown in just a few weeks. The quantity of data and information is overwhelming and sometimes just fake, making it difficult to properly assess the impact of the pandemic.

Even before Covid-19 stormed into our lives, there had been warnings of a possible pandemic. Scientific studies, some published in the most prestigious journals<sup>1</sup>, had revealed the risks for the outbreak of zoonotic diseases, especially of the SARS-type virus. In other words, the unforeseeable was foreseeable, but governments did not pick up the signals and thus did not get ready. As they favored just-in-time inventories over maintaining large stocks and preserving health services as control policies, countries were left to face the pandemic without the necessary capital funding, forcing them to turn to sub-optimal political decisions: locking down almost half of the planet. Many lives are still affected by a series of crises which have shattered the foundations of our political, economic, societal – and probably civilizational as well – models.

The future will tell us what we will have learned from this. Today, the burden placed on universities and students alike is a heavy one. Labs and libraries are closed, preventing students from pursuing their research projects. Classroom teaching and e-learning are not necessarily (or not at all) similar. The sense of isolation is strong, especially for foreign students who find themselves estranged from their families or for those living in sub-optimal conditions. Money problems easily add-on to these already difficult situations.

In our humble position, we decided to take action to support our scholars and strengthen the Arbour community. We set up on-line cafés and e-conferences – thanks to some of our scholars. It all came about rather organically to break isolation and maintain contact. These occasions provided comfort and a safe space where students could share their concerns and worries. In addition, we built a database where they could find the resources available to them, whether financial or psychological.

Our scholars being brilliant individuals, we have also encouraged them to bring their expertise to the table to look and share innovative solutions to the crisis. The pandemic has created unique opportunities for the scientific community to collaborate. Through trial and error, many innovative solutions have emerged in the past: Darwin, Einstein and Pasteur are good examples of such deviant innovations. We have thus encouraged our scholars to do his or her best to contribute at their own level, by not falling in the trap of knowledge compartmentalization and rather favouring communication, collaboration and creativity.

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<sup>1</sup>- Nature 2008 : <https://www.ncbi.nlm.nih.gov/pubmed/18288193>  
- Nature Medecine en 2016 : <https://www.nature.com/articles/nm.3985>  
- Proceedings of the National Academy of Sciences 2016: <https://www.pnas.org/content/113/11/3048>  
- CIA Report en 2017 : <https://www.ncbi.nlm.nih.gov/pubmed/18288193>  
- Bill Gates 2015: [https://www.ted.com/talks/bill\\_gates\\_the\\_next\\_outbreak\\_we\\_re\\_not\\_ready?language=fr](https://www.ted.com/talks/bill_gates_the_next_outbreak_we_re_not_ready?language=fr)

Now is a good time to rethink our world and our way of life. This moment in history allows us to recognize our common humanity and finitude and strikes up the challenge of complexity: learn from today, assimilate this new information, and create tomorrow's world while still living with the uncertainty of it all. It's time to get to work.

**MARINE HADENGUE**





## BOARD OF DIRECTORS



### **PHILIPPE ARBOUR M.Sc., CFA**

#### CHAIRMAN

Philippe Arbour is Managing Director of Structured Finance at London-based Palamon Capital, a European middle market private equity firm. He joined Palamon in 2013 following 10 years at Lloyds Banking Group. In 2010 he was seconded to 3i PLC, a British private equity firm. Philippe holds the CFA designation and has a Masters in Finance from Durham University and a Bachelor in Business Administration (Honours Economics) from Bishop's University.



### **MICHEL BRUNET**

Me. Brunet practices corporate and commercial law at Denton's Canada LLP's Montreal office. He focuses on the sale and acquisition of business corporations and on their financing needs. From 2006 to 2010, Me Brunet was the Chief Executive Officer of Fraser Milner Casgrain, one of Dentons' three founding firms..



### **DIANE DE CHAMPLAIN**

Most of her career has been spent in the world of communications and philanthropy. A graduate of the Université de Montréal and HEC Montréal, she was President of the Parents Association of Collège Jean-de-Brébeuf and a member of its Board of Directors. Later, she was entrusted with the reins of the Polytechnique Foundation as President and Chief Executive Officer. Her mandate was to raise \$100 million for Polytechnique as part of the Campus Montreal campaign. The goal was exceeded with \$111 million collected. She decided at the end of the campaign, in October 2017, to leave and continue to devote herself to other causes that are dear to her.





**MARINE HADENGUE B.ING., M.SC., PH. D.**

**SECRETARY OF THE BOARD**

A former scholar of the Foundation, Marine Hadengue holds a Ph.D. degree in Engineering from Polytechnique Montreal. She is currently an Assistant professor at SKEMA, a global business school with campuses located in the United States, France, China, Brazil and South Africa. Before doing her Ph.D., Marine worked as an engineer at Essilor. She also holds an M.Sc. in Political Science from the Université of Montreal and a BA in Mechanical Engineering from Polytechnique Montreal. She did her postdoctoral studies at Polytechnique Paris.



**MICHEL BOLDUC**

Michel Bolduc is a well-known real estate developer in Montreal. He recently completed the ORO luxury condominium project, located across from the Montreal Museum of Fine Arts. Mr. Bolduc ended his mandate as Director of Fondation Arbour in July 2019. He had been on the Board since the creation of the Foundation in 2005. We would like to thank him for his generous contribution and commitment to our mission.



**ANDRÉ LAURIN**

André Laurin was until recently President and CEO of BrainBank, an innovation management technology company with software deployed on a global scale by Fortune 500 and Global 1000 clients such as Verizon, Nestlé and Bridgestone as well as government agencies. After a successful exit from the company he founded in 1999, he is now an independent investor. He has a B.A. from Concordia University.



**ANDRÉ MONETTE**

With degrees from Polytechnique Montréal, McGill and Harvard, Mr. Monette made a career for himself at Johnson & Johnson, Trust Royal, Banque Laurentienne and Les Placements TAL limitée, working not only in Canada but in France and Switzerland as well. He served as a management consultant and a member of the Board of Directors for Investissement-Québec for over six years. Mr. Monette also served on the Fonds de Solidarité committee as well as that of Amorchem.



## OUR NEW OFFICERS: OUR FAMILY IS GROWING



### **JOËLLE DORAIS** EXECUTIVE ASSISTANT

With a positive outlook and a cheery disposition, Joelle is easy to engage with and makes a point of being available to listen and lend a hand. Before joining the Arbour Foundation as Executive Assistant, Joëlle worked for the Canadian Institutes of Health Research, the Research Centre of the Institut universitaire de gériatrie de Montréal and the Montreal Children's Hospital Foundation, among others.

As Executive Assistant of the Arbour Foundation, Joëlle is the first contact point with the scholars and the partners. She assists the CEO with strategic development and the promotion of the visibility and mission of the Foundation, in line with the values of its founder, Mr. Pierre Arbour.



### **HUSSEIN SLIM** COMMUNICATIONS ADVISOR

Hussein is a graduate of the University Wuppertal, Germany, in Electrical Engineering (2009) and a former senior operation engineer with expertise in electric grids operations and management. Currently, he is pursuing a Ph.D. degree in Engineering at École de technologie supérieure (ÉTS) in Montreal. His research is aimed at investigating and designing approaches and models to classify and quantify uncertain information for performance and safety assessments in complex sociotechnical systems, specifically in the context of aircraft deicing operations.

In addition, Hussein serves as Communications Advisor for the Arbour Foundation. His main role is to help promoting scholars and the Foundation. To this end, he communicates with scholars and the academic community, provides technical and creative support to the Foundation, implements strategies and practical steps to increase social media presence, designs and develops content ideas for publication, etc.



### **ÉMILIE THIBAUT** PUBLIC RELATIONS ADVISOR

Émilie completed her Bachelor's degree in Chemical Engineering at Polytechnique Montréal (Po 141) and is currently completing a PhD in Environmental Design. More specifically, she is studying decision making related to design and operations in complex industrial environments through the study of real-time data. Her research is applied to a pulp and paper mill and is done in collaboration with OSIsoft, 3CSoftware and Aurel Systems. In addition, Émilie is deeply involved in the promotion of science and engineering among high school and college students. Also she is very active in the environmental field.

The position of Public Relations Advisor has two components: monthly profiles and newsletters. The latter are written two to three times a year and report on news related to the Foundation, the accomplishments of our scholarship recipients and the events we organize. The monthly profiles feature some of our past scholars who would be willing to open their contact network to younger scholars. It is a way to showcase the Foundation's community and to pass on the success of earlier recipients to the most recent ones.

## OUR SCHOLARSHIPS

Our scholarships are among the most generous in Canada. The Arbour Foundation is one of the few organizations to support foreign students. Together with our university partners, we fund students in Engineering, Computer Science and Management. Our funding is allocated in the following way:

- up to \$10,000 per year for Master program students (renewable once)
- up to \$17,000 per year for Ph.D. program students (renewable once)
- between \$9,000 and \$13,000 for MBA program students (not renewable)

Our scholars are exceptional students. They have been carefully selected first by their university and second by the Foundation's Selection Committee during a 30-minute individual face-to-face interview. Each of them embodies academic excellence and outstanding leadership skills, but, most of all incredible perseverance. Our scholars are deserving students who, at one time or another in their lives, have overcome major challenges either personal or professional. We believe that these ambitious young persons do or will contribute to Québec's economy by bringing innovative solutions to current and emerging issues.





## OUR PARTNERS



Le génie pour l'industrie

# HEC MONTRÉAL



POLYTECHNIQUE  
MONTRÉAL



UNIVERSITÉ  
D'INGÉNIERIE



Université   
de Montréal

# UQÀM



# Mitacs



## OUR SCHOLARS 2019-2020 AND THEIR THESES



Suzan Ali	M.A.Sc.	Privacy Risks of Public WiFi Captive Portals.
Wala'a Almakhadmeh	Ph.D.	Shrinkage of alkali-activated slag; Mitigation techniques.
Akhil Raj Kizhakkan	M.A.Sc.	Novel Electric Vehicle Charging Station (EVCS) location optimization technique integrating Road Network layer and Electric Distribution Network.
Negar Salimzadeh	Ph.D.	Optimizing PV Layouts on Buildings Skin Using Generative Design.
Nkemdilim Umezude	M.A.Sc.	Tunable Stiffness Passive Layer Jamming Technique for Anthropomorphic Robotic Fingers.



Charles Alexandre	Ph.D.	Changements climatiques en Analyse du Cycle de Vie.
Nasrin Attari	Ph.D.	Development of an innovative nanocomposite polymeric membrane and water treatment process to separate nanoplastic particles from drinking water.
Gabrielle Cretot-Richert	Ph.D.	Monitoring attention using ear-EEG.
Roseline Olory Agomma	Ph.D.	Méthode automatique pour la localisation et l'identification de structures osseuses dans les radiographies EOS.
Hussein Slim	Ph.D.	Development of risk and safety analysis models for complex sociotechnical systems with applications in aircraft deicing operations.

## HEC MONTRÉAL

Ali Abolghasemi	Ph.D.	Asset prices in a granular economy.
Franck Benichou	M.Sc.	Software Development   Data Science - No Research Subject.
Jérémi DeBlois-Beaucage	M.Sc.	Graph Neural Networks for Recommender Systems.





Leah Abou Jaoude	M.Sc.	Influences of freestream turbulence intensity and char-layer characteristics on the heat transfer from windborne firebrands.
Matthew Bartolone	M.Sc.	Application of strategy and analytics in human capital services.
Hyacinth Chijioke Ali	Ph.D.	Modular Combination and Reuse of Software Languages.
Tyler Gilbert	M.Sc.	Development of a model to predict and display early warnings for companies given loans that are at risk of defaulting for bank .
Austin L'Ecuyer	M.Sc.	Development and Implementation of Realistic Flow Patterns for Unsteady Wind Tunnels.
Zhijun Liu	M.Sc.	Finance
Felix Zhonghan-Lu	M.Sc.	Finance



Laura Ahunon	M.Sc.A. / Ph.D.	Biomaterial for the treatment of Diabetic Foot Ulcers.
Mayari Bernard-Garcia	Ph.D.	Modélisations numériques de l'hydrogramme de rupture par submersion de barrages en remblai.
Florent Herbinger	Ph.D.	Integrating Waste Heat from Buildings in District Energy Networks.
Kwassi Holali Degue	Ph.D.	Secure and privacy-preserving cyber-physical systems.
Marcel Kaufmann	Ph.D.	Symbiotic Human and Multi-Robot Planetary Exploration Systems.
Alexis Montoisson	Ph.D.	Méthodes multi-précision pour l'optimisation et l'algèbre linéaire.
Émilie Thibault	Ph.D.	Design and operational decision-making in complex industrial environments using real-time data.



Manouchehr Zadahmad Jafarlou Ph.D. Domain-Specific Version Control Systems.



Élodie Chateauvert MGP Project Management - no thesis.

Amir Mohamed Boutaghou M.Sc. Implementation of a new collaborative filtering approach using distributed computing technology.

Jonathan Élie-Fortier Ph.D. Développer un système tutoriel intelligent (STI) pour l'apprentissage et l'évaluation de la mécanique quantique.

Alexandra Marin M.A. Project Management - no thesis.



Khaoula Alaoui Mamoun Ph.D. Importance des soft skills en gestion de projets.

Sophia Camiré Wan MBA No thesis.

Thierno Mamoudou Diallo Ph.D. Growth and Characterization of III-V Semiconductors and 2D materials for Avalanche Photodiodes applications.

Marcel Masineau Tadzong Kenne DBA Facteurs technologiques du processus attentionnel des professionnels ayant un impact sur l'efficacité des meetings au travail.

Félix Vigneault M.Sc. Interpretation of ASTD specifications for information systems.

Nancy Youssef DBA Impact du domaine de spécialité sur le mieux-être au travail chez les avocats québécois.



## THE PIERRE ARBOUR HONORARY AWARD

We are proud to present you with our newest award: the Pierre Arbour Honorary Award. Valued at \$15,000, this award in memory of our founder Mr. Pierre Arbour highlights the excellence and the spectacular achievements of the recipients and their ability to proudly carry the values of the Arbour Foundation. The first two recipients of this prestigious award are Marcel Kaufmann and Émilie Thibault, both students at Polytechnique Montréal.



Marcel is currently a PhD candidate in Computer Engineering with the «Making Innovative Space Technologies» (MIST) Laboratory at Polytechnique Montréal. He is focusing on multi-robot systems, swarm technologies, and human-robot interaction. In 2016, he graduated from the University of Applied Sciences Darmstadt in Germany and holds a BSc and a MSc degree in Photonics and Computer Vision. During the summer of 2017, he attended the International Space University's Space Studies Program hosted by the Cork Institute of Technology in Ireland. As part of his research at Polytechnique, he is currently collaborating with Caltech and NASA's Jet Propulsion Laboratory on robotic exploration systems in California.

*"I would like to express my deepest gratitude for the loving support of my studies and space endeavours! I could not be more humbled to receive the first edition of this honorary award. Pierre's vision of starting the Foundation and his generosity give me this invaluable chance to pursue and further commit to a career in the robotics and space domain – It is my firm belief that developing new space technologies will create spin-off and spin-in products that will benefit everyone in Québec, Canada and humankind at large. Un grand merci!"*

Marcel Kaufmann

Émilie completed her Bachelor's degree in Chemical engineering at Polytechnique Montréal (Po 141) and is currently completing a PhD in the field of environmental design. More specifically, she is studying decision making related to design and operations in complex industrial environments through the study of real-time data. Her research is applied to a pulp and paper mill and is done in collaboration with OS/soft, 3CS/Software and Aurel Systems. In addition, Émilie is very involved with young people to promote science and is very active in the environmental field.

*"I could never thank the Arbour Foundation enough for its generosity toward me. As a token of my gratitude, I will do everything in my power to perpetuate Mr. Pierre Arbour's values and therefore those of the Foundation, in which I believe and fully support. I believe that my field of research - the pulp and paper industry - is beneficial for Québec society and that there are many opportunities in it. I feel honoured by your support and privileged to be a recipient of the Pierre Arbour Honorary Award. Thank you so much for selecting me!"*

Émilie Thibault

# ENCOURAGING ENTREPRENEURSHIP

## THE ARBOUR FOUNDATION SUPPORTS TECHNOLOGICAL ENTREPRENEURSHIP

The Arbour Foundation believes that Quebec's economic growth is also linked to the development of technological entrepreneurship. In addition to its regular scholarships, the Foundation now funds technological innovations and deep-tech start ups (from university lab to market). As technological start-ups in Montreal represent 1% vs 10% in Boston (according to experts), the Arbour Foundation is dedicated to making a difference. We want to support students to take their ideas from lab to market and benefit society in general by doing so.



Thus, in 2019, **we signed a partnership with Mitacs Acceleration, a flagship initiative for university entrepreneurship from Mitacs** - a national, not-for-profit organization that supports research-based innovation with the support of all levels of governments bringing in hundreds of millions of dollars every year. As part of the Mitacs Acceleration program, we have set up a specific financial package of \$15,000 (\$7,500 from Mitacs, \$5,000 from the Arbour Foundation, \$2,500 from the start up) to support selected entrepreneurs. This package ensures that candidates go through the selection process set up by Mitacs (5 levels and an external scientific committee) and that we fund the most promising tech projects from each of our university partners.

More recently, the Arbour Foundation, in collaboration with Concordia University District 3, an innovation hub for emerging technologies, **has strengthened its selection process in the Mitacs Acceleration program by concentrating its funding to students who have completed the online program QcSE** (Quebec Scientific Entrepreneurship Program) in addition to having gone through the selection process of Mitacs. This online lab-to-market program helps researchers build world-changing tech companies derived from their academic research.



## GOING BEYOND FINANCIAL SUPPORT

### PRESENTATION OF OUR MENTORSHIP PROGRAM

The Foundation has a Mentorship program. The members of its Board of Directors, according to their specific skills, are available to advise and guide selected fellows in their studies and in their respective careers.

Each scholarship recipient can be mentored for the duration of the scholarship. This mentoring program consists of regular meetings between the mentor and the student. The student is then fortunate to benefit from the great experience and the network of his mentor:

Each year, about fifteen of our laureates are fortunate enough to be mentored by our administrators. These students benefit from personal and professional support allowing them to excel even more. They also benefit from the precious network of our administrators, which allows some to find jobs or internships in prestigious organizations. Each year, a survey is distributed to these students to check if their expectations have been met. We will strive to continue to offer these opportunities to our fellows!

### TESTIMONY OF DIANE DE CHAMPLAIN, MENTOR

*"What could be more rewarding and engaging than to share one's life and work experience with students who are so eager to learn. Not only does the Arbour Foundation offers financial support to its scholars, but it also provides opportunities for Board Members who wish to do so to accompany them diligently throughout their studies and their career choices. This is the perfect opportunity to create lasting relationships and to give back!"*



### RECOGNITION FROM SOME OF OUR MENTEES

*"I want to express my thanks to the foundation and my mentor for being there for me and providing teaching of your best experiences for me. Your entrepreneurial skill has won you many admirers. You are truly a great inspiration for me. Accept my heartfelt gratitude for your time, support, and patience. Thanks for guiding me towards the right path."*

*"When I was offered the opportunity to join the mentorship program of the Arbour Foundation, I was not aware of how this would benefit my studies or career. Eventually, I applied hoping to find quick answers and tips on the integration into Canadian society and starting a career in Quebec after graduation. Today, I am happy that I decided to apply to the program and I consider myself very lucky to have been accepted. I learned a lot from my mentor and I am privileged to have such a great relationship with such an inspiring human. Her advice and guidance helped me through a lot of adversity on both personal and academic levels. Her moral support and motivation gave me much needed confidence in myself, which eventually pushed me to make brave decisions and achieve new heights. My mentor was firstly a friend, with whom I could discuss academic topics, career perspectives, politics and life philosophy. I am thankful for knowing her!"*



## EVENTS ORGANIZED BY THE FOUNDATION

THE FOUNDATION HOSTED TWO MAJOR NETWORKING EVENTS IN 2019

### WHAT NO ONE WILL TELL YOU ABOUT ENTREPRENEURSHIP

On June 26th, we had the chance to host Antoine Azar, cofounder and CTO of Fiska (formerly Thirdshelf), a financial technology firm. Fiska is backed by some of the top investors in fintech & retail technology, and was featured in TechCrunch, NRF's STORES, 9To5Mac, and other international publications. A respected leader in innovative digital technologies and a member of the Forbes Tech Council, Antoine came to give us 10 wise advices to succeed in becoming an entrepreneur.



### THE APPLICATION OF ARTIFICIAL INTELLIGENCE FOR PRODUCTS AND TECHNOLOGY: FROM SILICON VALLEY TO QUEBEC

On December 3rd, the Arbour Foundation, CIRANO and Polytechnique Montreal teamed up to organize a conference on the Application of Artificial Intelligence for Products and Technology: from Silicon Valley to Québec, presented by Rubén Caballero, Poly 91, and holder of a 2019 honorary doctorate from Poly-UdeM. Following the presentation, Thierry Warin, Principal Investigator in Data Science for International Business at CIRANO and Director of the SKEMA Global Lab in Augmented Intelligence, led a discussion. This event, which attracted over 300 people, of which more than 75% were students, was a great success.





## OUR SCHOLARS AND THEIR ACHIEVEMENTS

### LAURA AHUNON

#### RECENT AWARDS AND RECOGNITION

FRQNT Master (BIX) Research Scholarship.

Secrétaire générale de l'Association des étudiants aux cycles supérieurs de Polytechnique 2020-2021.

### HYACINTH CHIJOKE ALI

#### RECENT AWARDS AND RECOGNITION

McGill Engineering Doctoral Award

#### RECENT PUBLICATIONS

Ali, H., Mussbacher, G., and Kienzle, J. (2019) Generic Graphical Navigation for Modelling Tools. 11th System Analysis and Modeling Conference (SAM 2019), Munich, Germany, September 2019.

Ali, H., Mussbacher, G., and Kienzle, J. (2019) Towards Modular Combination and Reuse of Languages with Perspectives. 1st International Workshop on View-Oriented Software Engineering (VoSE), Munich, Germany, September 2019. (to be published).

Ali, H., Mussbacher, G., and Kienzle, J. (2019) Generic Navigation of Model-Based Development Artefacts. 11th Workshop on Modelling in Software Engineering (MiSE 2019), Montreal, Canada, May 2019. IEEE CS, 35-38. DOI: 10.1109/MiSE.2019.00013.

### WALA'A AL-MAKHADMEH

#### RECENT PUBLICATIONS

Journal Paper in the second round (Journal of Sustainable cement-based materials): Effect of activator nature on properties development of alkali-activated slag binders, Will be published in June 2020.

Al Makhadmeh, Wala'a and Soliman, Ahmed «Effect of sodium oxide on properties of Alkali Activated Slag mortars, 7th CSCE

International Specialty Conference on Engineering Mechanics and Materials, Laval, Qc, Canada, June 2019.

Al Makhadmeh, Wala'a and Soliman, Ahmed «Comparative analysis reaction kinetics of one and two -parts Alkali Activated Slag, 7th CSCE International Specialty Conference on Engineering Mechanics and Materials, Laval, Qc, Canada, June 2019.

Al Makhadmeh, Wala'a and Soliman, Ahmed «Shrinkage of Alkali Activated Slag: Mitigation Techniques» In Proceeding of the 15Th International conference on structural and geotechnical engineering Advances in construction techniques, Cairo, Egypt, December 2018, pp. 160-161. Alexis Montoisson.

### NASRIN ATTARI

#### RECENT AWARDS AND RECOGNITION

ETS Doctoral Award.

Molson Foundation for water research.

Map the System contest at Oxford University in May 2020.

Graduate Research Trainee at Biointerface Lab, McGill University.

#### RECENT PUBLICATIONS

Paper acceptance at 4th International Conference of Recent Trends in Environmental Science and Engineering (RTESE'20), November 12 -14, 2020 | Niagara Falls, Canada: Nasrin Attari, Robert Hausler, Morphological investigation of Cellulose Acetate nanofibrous membranes.

### ALI ABOLGHASEMI

#### RECENT AWARDS AND RECOGNITION

SSHRC Doctoral Fellowship 2020-21.

8th HEC-McGill Winter Finance Workshop (Desmarais), Fernie, British Columbia, Canada, 2020.

Travel grant by the American Finance Association.

Hydro Québec PhD Scholarship.

Jean-Louis Mercier PhD Scholarship.  
Visiting Scholar, Tepper School of Business at Carnegie Melon, Pittsburgh, Pennsylvania, USA (Expected: Winter 2021).  
Society of Financial Econometrics Summer School, Kellogg School of business. Chicago, Illinois, USA (July 2019).  
Collaboration in Canada Research Chair in Macro Finance and Canadian Derivatives Institute.

## FRANCK BENICHOU

### RECENT AWARDS AND RECOGNITION

2020 Winter Internship at Brisk Synergies (ITS Solutions) on road user tracking. Solution is part of a bigger AI powered covid related traffic engineering solution used in major municipalities like New York, Montreal, Toronto.

Incoming Data Scientist 2020 Summer Intern at Intact Data Lab (UBI division).

Learning Expedition through Sciences Po Paris and the itrek foundation where I co-led a group of 13 International Affairs and Public Policy Sciences Po Paris Students, from Feb 16 to Feb 23, in Israel and Palestine (Ramallah).

Organized the 2nd edition of the HEC Forecast Conference on Feb 11 2020 that gathered more than 300 participants and prestigious global companies and their top leaders (McKinsey Quantum Black, BCG Gamma, Deloitte Omnia, Thales, National Bank, etc...).

NSERC-CREATE Program on Machine Learning in Quantitative Finance and Business Analytics (Fin-ML CREATE) Scholarship in November 2019.

## MAYARI BERNARD-GARCIA

### RECENT PUBLICATIONS

«A Worldwide Historical Dam Failure's Database / Base de données de ruptures historiques de barrages à travers le monde»,  
<https://doi.org/10.5683/SP2/E7Z09B>, Scholars Portal Database, V1.

## JÉRÉMI DEBLOIS-BEAUCAGE

### RECENT AWARDS AND RECOGNITION

Fin-ML NSERC CREATE Graduate Student (2019-2020): Training and professional experience in applying ML techniques in Business Intelligence and Finance.

International Student at University of Porto (Spring 2020), Economics and Computer Science: part of the Quantitative Techniques for Economics and Management (QTEM) program.

## KWASSI HOLALI DEGUE

### RECENT AWARDS AND RECOGNITION

FRQNT Doctoral (B2X) research scholarship.

Mitacs Globalink Research Award.

Visiting Researcher at Massachusetts Institute of Technology.

### RECENT PUBLICATIONS

Kwassi H. Degue, Denis Efimov, Jerome Le Ny. An interval observer-based feedback control for rehabilitation in Tremor. In Proceedings of the 2020 European Control Conference (ECC 2020), Saint Petersburg, Russia, May 2020.

Kwassi H. Degue, Jerome Le Ny. Differentially private interval observer design with input perturbation. In Proceedings of the 2020 American Control Conference (ACC 2020), Denver, CO, USA, July 2020.

## THIERNO MAMOUDOU DIALLO

### RECENT AWARDS AND RECOGNITION

MITACS Globalink Research Award.

Invited researcher at the Centre de Nanosciences et Nanotechnologies (C2N-France).

### RECENT PUBLICATIONS

Hybrid Epitaxy Technique for the Growth of High-Quality AlInAs and InGaAs Layers on InP Substrates (Editor's pick)  
Thierno Mamoudou Diallo, Alex B. Pougoué Mbeunmi, M. El-Gahouchi, M. Jellite, R. Arvinte, M.R. Azizyan, R. Arès, S. Fafard,

A. Boucherif, Journal of Vacuum Science & Technology B 37, 031208 (2019) <https://doi.org/10.1116/1.5088962>.

Thermally Induced Formation of Etch Pits on Ge Surfaces under Conditions of CVD Graphene Thierno Mamoudou Diallo, R. Arvinte, M.R. Aziziyan, R. Arès, S. Fafard, A. Boucherif 2019 ECS Trans. 93 91 <https://doi.org/10.1149/09301.0091ecst>.

## FLORENT HERBINGER

### RECENT AWARDS AND RECOGNITION

Prestige USA Award for internship at Cornell University, NSERC Postgraduate Scholarship - Doctoral recipient.

## MARCEL KAUFMANN

### RECENT AWARDS AND RECOGNITION

Visiting Researcher at NASA Jet Propulsion Laboratory. Working on the next generation of robotic exploration systems, robotic interfaces and autonomy.

Speaker at the Montreal Space Symposium 2019 hosted at ICAO.

Teaching Assistant for the Space Studies Program 2019 hosted at the International Space University (Strasbourg, France) for lectures on GPS-denied Robot Navigation and Multi-Robot Exploration Systems.

Prix honorifique Pierre Arbour 2020.

NSERC Vanier Canada Graduate Scholarship.

FRQNT Bourses d'excellence pour étudiants étrangers (1st rank, declined).

35 Under 35 in the Space Industry Award 2018.

### RECENT PUBLICATIONS

The Sound Settler: Spontaneous HRI in an Art Setting. Marcel Kaufmann, Adrian Zwiener, Jean-François Robin, Jean-Pierre Gauthier, Giovanni Beltrame, and David St-Onge. 2020. In 15th ACM/IEEE International Conference on Human-Robot Interaction (HRI)

Planetary exploration with robot teams: Implementing higher autonomy with swarm intelligence David St-Onge, Marcel Kaufmann, Jacopo Panerati, Benjamin Ramtoula, Yanjun Cao,

Emily BJ Coffey, Giovanni Beltrame, IEEE Robotics & Automation Magazine.

UAV Swarm Control and its Influence on Cognitive Workload: A Field Experiment Marcel Kaufmann, David St-Onge, Benjamin Ramtoula, Jacopo Panerati, Yanjun Cao, Emily Beatrice Jane Coffey, and Giovanni Beltrame (2019), Canadian Aeronautics and Space Institute AÉRO 2019 Conference.

## AKHIL RAJ KIZHAKKAN

### RECENT PUBLICATIONS

IEEE conference and later transaction on "Small Signal Analysis and Closed-Loop Design of Constant Frequency Operated Snubberless Naturally-Clamped Soft-Switching Current-Fed Push-Pull DC/DC Converter" at Industry Applications Society Annual Meeting (IAS) 2019, Vancouver, Canada.

## ALEXIS MONTOISON

### RECENT AWARDS AND RECOGNITION

IVADO Excellence Scholarship (PhD).

GERAD travel grant.

Stanford University invitation for a 4-month collaboration stay in 2021.

2020 Student Paper Competition Winner «16th Copper Mountain Conference On Iterative Methods» au Colorado (<https://grandmaster.colorado.edu/copper/2020/>).

### RECENT PUBLICATIONS

A. Montoisson & D. Orban: BiLQ: An Iterative Method for Nonsymmetric Linear Systems with a Quasi-Minimum Error Property -> accepté pour publication au SIAM Journal on Matrix Analysis and Applications (SIMAX).

## NEGAR SALIMZADEH

### RECENT AWARDS AND RECOGNITION

Best Poster Presentation Award, 6th CSCE Colloquium. Sustainability Research Award - Concordia University.

Sustainability Action Fund.

Faculty of Engineering & Computer Science Graduate Scholarship -Concordia University.

Concordia University Conference and Exposition Awards (2).

#### RECENT PUBLICATIONS

Salimzadeh, N.,Vahdatikhaki, F., & Hammad,A. (2020). Parametric Modelling and Surface-specific Sensitivity Analysis of PV Module Layout on Building Skin Using BIM. *Energy and Buildings*, 109953.

Salimzadeh, N.,Vahdatikhaki, F., and Hammad, A. (2018). BIM-based Surface-specific Solar Simulation of Buildings, The 35th International Symposium on Automation and Robotics in Construction (ISARC), Berlin, Germany.

### HUSSEIN SLIM

#### RECENT PUBLICATIONS

Slim, H. and Nadeau, S. (2019) A Proposal for a Predictive Performance Assessment Model in Complex Sociotechnical Systems Combining Fuzzy Logic and the Functional Resonance Analysis Method (FRAM). *American Journal of Industrial and Business Management*, 9, 1345-1375.

Slim, H., Nadeau, S. A Mixed Rough Sets/Fuzzy Logic Approach for Modelling Systemic Performance Variability with FRAM. *Sustainability* 2020, 12, 1918. Conference publication at Canada's leading aeronautics conference CASI-AERO 2019: Slim, H. and Nadeau, S. 2019. «The need for a systemic perspective in aircraft deicing: a proposal of a risk and safety analysis method combining FRAM and fuzzy logic ». In CASI-AERO 2019 (Laval, QC, Canada, 14-16 mai 2019).

### ÉMILIE THIBAUT

#### RECENT AWARDS AND RECOGNITION

Internship with McKinsey in 2021.

Bourse d'excellence Neil R. Mitchell et Danièle Dumais.

### NKEMDILIM UMEZUDE

#### RECENT AWARDS AND RECOGNITION

Certified SolidWorks Professional (CSWP) 2020.

Certificate of Appreciation - International Conference on Robotics and Automation 2019.

Golden Key International Honour Society 2019.

### NANCY YOUSSEF

#### RECENT PUBLICATIONS

CADIEUX, Nathalie, CADIEUX, Jean, YOUSSEF, Nancy, GINGUES, Martine et GODBOUT, Sarah-Maude (2019). RAPPORT DE RECHERCHE : Étude des déterminants de la santé psychologique au travail chez les avocat(e)s québécois(es) - PHASE II – 2017-2019 (confidentiel) – 181 pages- Published.

CADIEUX, Nathalie, CADIEUX, Jean & YOUSSEF, Nancy (2019). Construction and Validation of a Professional Stressors Index (PSI) for Regulated Occupations Among Quebec Lawyers. *European Congress of Work and Occupational health*. 2019. 25 pages-Published.

CADIEUX, Nathalie, MOSCONI, Elaine, & YOUSSEF, Nancy (2019). ICT, Permeability Between the Spheres of Life and Psychological Distress Among Lawyers. In: *Proceedings of the 52nd Hawaii International Conference on System Sciences*. 10 pages- Published.

CADIEUX, N., CADIEUX, J., YOUSSEF, N., GINGUES, M. & GODBOUT, S-M. (2020). Research Report: A Study of the Determinants of Mental Health in the Workplace Among Quebec Lawyers, Phase II - 2017-2019. Research Report, Université de Sherbrooke, Business School, 177 pages. - Published.

CADIEUX, Nathalie, CADIEUX, Jean, YOUSSEF, Nancy & MOSCONI, Elaine. Techno(Stress) and Techno(Distress) (2020) : Validation of a Specific TechnoStressors Index (TSI) Among Quebec Lawyers – 10 pages - Accepted.





## TESTIMONIALS AND THANK YOUS

### LAURA AHUNON

**M.Sc. and Ph.D. Candidate at Polytechnique Montréal**

*"The recognition I receive from the Arbour Foundation is very dear to me as it makes me feel valued not only for my education but also for my personality and my ambitions. I feel you do put people first: by selecting individuals who share your values and whose brains will contribute to society in return."*

### KHAOULA ALAOUI MAMOUN

**Khaoula Alaoui Mamoun**

**Ph.D. Candidate, Université de Sherbrooke**

*"I would like to thank you wholeheartedly for giving me this generous scholarship. Besides the financial support for the costs entailed by my doctoral studies, the scholarship means that you also encourage my perseverance, determination, academic excellence and community involvement. It also acknowledges the relevance and the importance of my research project from the Foundation. It also pays tribute to my daily obligations to successfully combine studies, work and family."*

### SOPHIA CAMIRÉ WAN

**MBA Candidate at Université de Sherbrooke**

*"I would like to express my heartfelt thanks to the Arbour Foundation for their support and encouragement during my studies. The scholarship has relieved the financial burden of going back to school and has allowed me to focus on what mattered most: my studies! Their continuing support and enriching lectures have been a real blessing. The Foundation makes us feel special and pushes us to excel in all aspects of our life. The Arbour Foundation is so much more than just money! I feel privileged to be one of their scholars."*

### KWASSI HOLALI DEGUE

**Ph.D. Candidate at Polytechnique Montréal**

**Visiting Researcher at MIT**

*"I would like to reiterate my gratitude towards the Arbour Foundation for it provided me with: time to concentrate solely on my postgraduate studies and to focus on being at the top of my research."*



## FLORENT HERBINGER

**Ph.D. Candidate at Polytechnique Montréal**

**Internship at Cornell University**

*"Last fall I had an internship at Cornell University in the United States. Since the cost of living is quite high over there doubled with a poor exchange rate, your help was a true blessing as it lightened my financial burden in the US and upon my return at Polytechnique."*

## MARCEL KAUFMANN

**Ph.D. Candidate, Polytechnique Montréal**

**Pierre Arbour Honorary Award**

**Visiting student researcher at NASA Jet Propulsion Laboratory in California**

*"I am very grateful for the foundation's trust and support. Not only did it enable me to advance in my Ph.D. studies a lot, but it also made me part of the Arbour Foundation Family of which I am very proud.*

*You opened doors for me that would not have opened otherwise: Last year, I got to test my research during a field experiment and trained an ESA astronaut in Lanzarote, Spain. My future is in the space sector and if I get a chance to leave this beautiful blue planet, there will be a live link to an Arbour Foundation Wine & Cheese event as promised. I will work hard on my astronaut career to send you an out of this world thank you."*

## ROSELINE OLORY ALGOMMA

**Ph.D. Candidate at École de technologie supérieure**

*"I am writing this letter to thank you for renewing my Arbour scholarship. I feel honored to have been selected. Your support means that I can devote myself to my studies. It will also have a huge impact on my student and professional life, as well as for day-to-day activities. One day I hope I will be able to give back by helping other students."*

## MARIE-CLAUDE SAVARD

**Lecturer, PhD candidate at Université du Québec à Montréal & Associate Director**

**at Observatoire canadien sur les crises et l'action humanitaires (OCCA)**

**Scholar 2017-18**

*"I wish to reiterate my gratitude toward the Arbour Foundation for offering me a scholarship and a renewal in 2017-18. As the saying goes - one scholarship follows another - I received the Montreal Council on Foreign Relations (MCFR) Scholarship to support my management research project abroad. Your support was key to starting and pursuing my doctoral studies and for allowing me now to travel abroad to complete my research project without the burden of financial worries. I am honored to be an alumnus of the Arbour Foundation. Thank you again."*





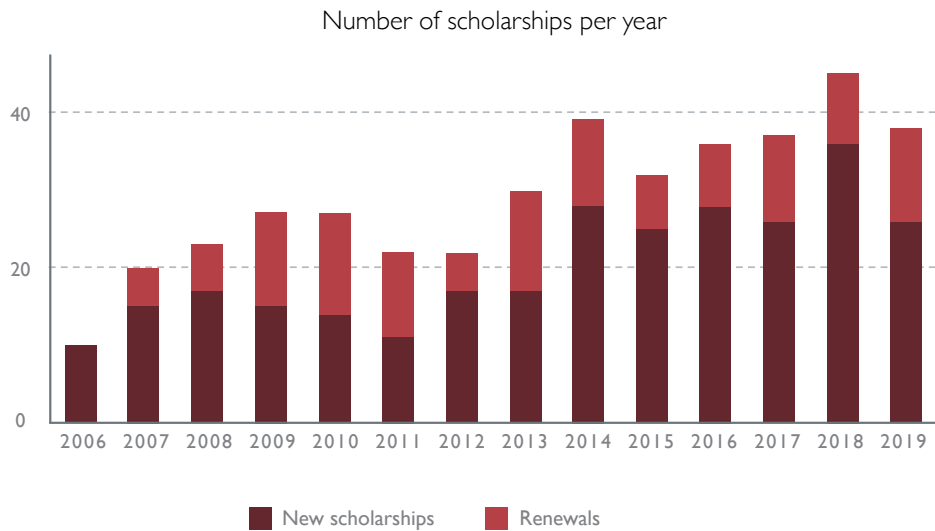


# KEY PERFORMANCE INDICATORS

## NUMBER OF SCHOLARSHIPS

**408**  
Total number of scholarships awarded since the creation of the Foundation

**over 4,5 M\$**  
Total amount of scholarships awarded since the creation of the Foundation



## AMOUNT OF SCHOLARSHIPS

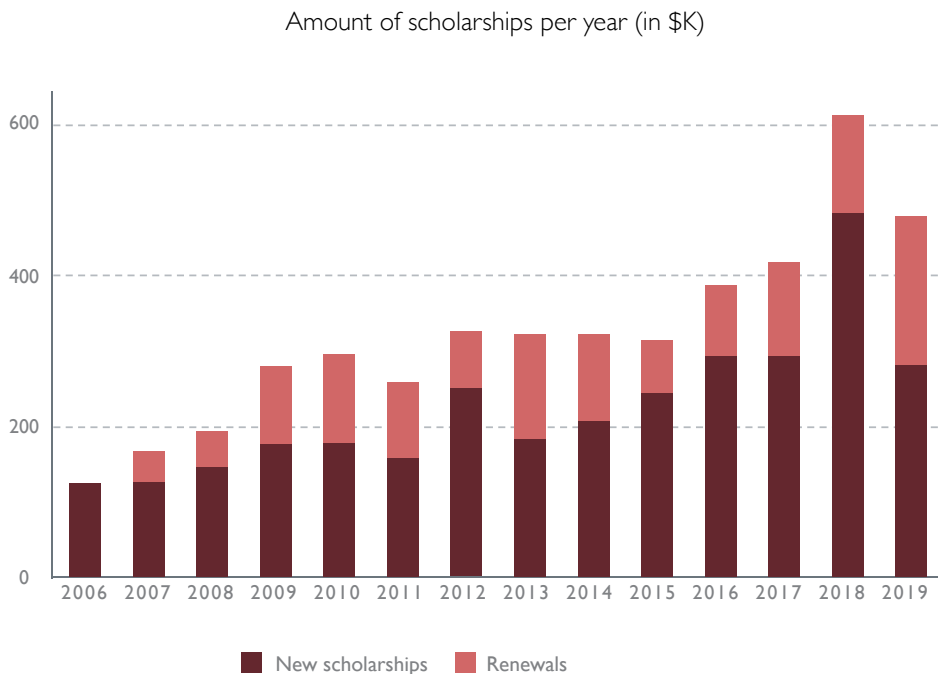
**\$10,000**  
Scholarship value for MSc in 2019

**\$17,000**  
Scholarship value for PhD in 2019

**\$13,000** HEC, McGill  
Concordia

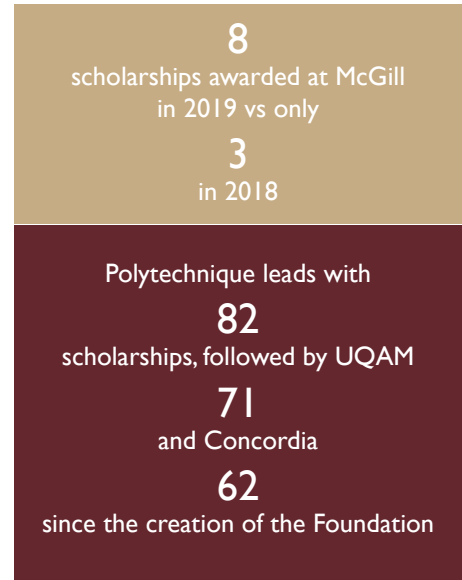
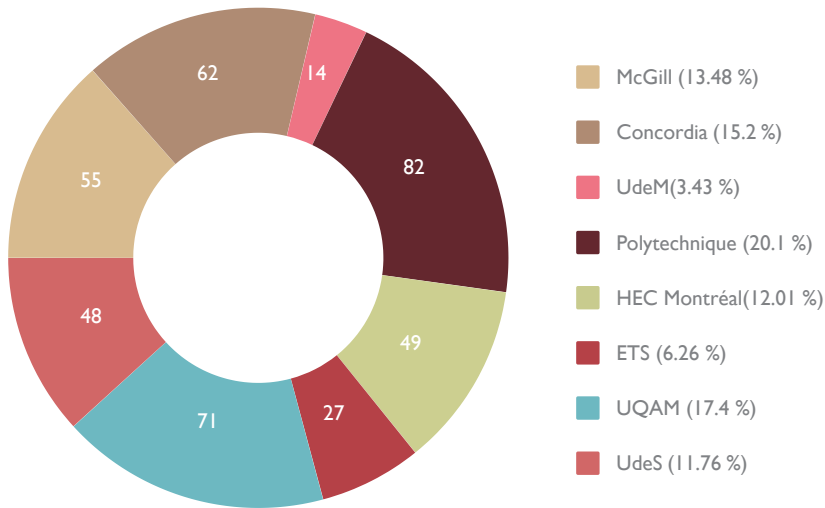
**\$9,000** UdeS

Scholarship value for MBA in 2019

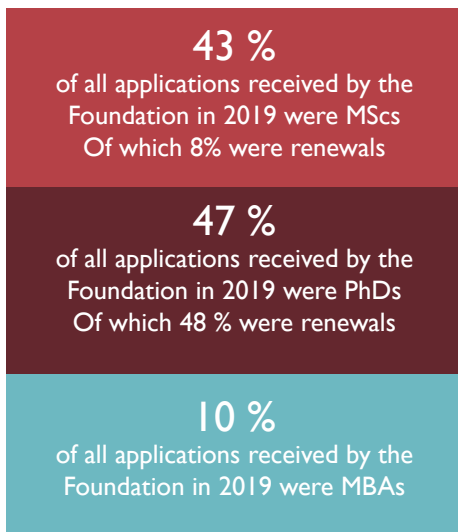


## PER UNIVERSITY

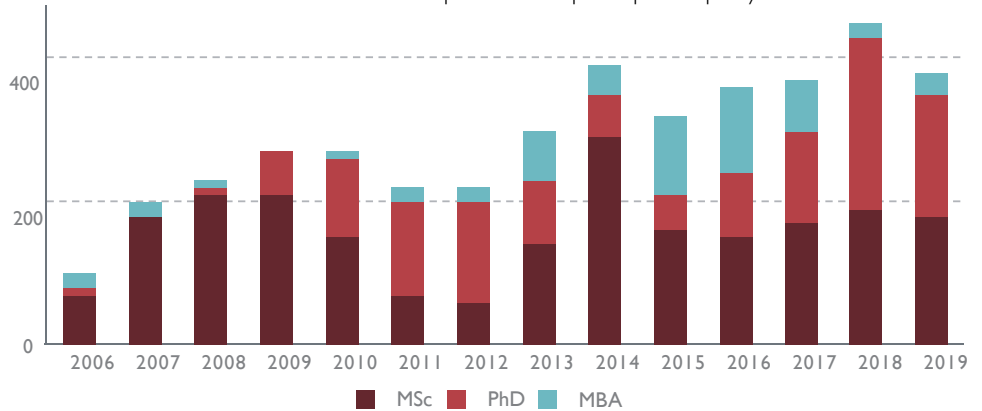
Number of scholarships per university awarded since the creation of the Foundation



## PER DIPLOMA

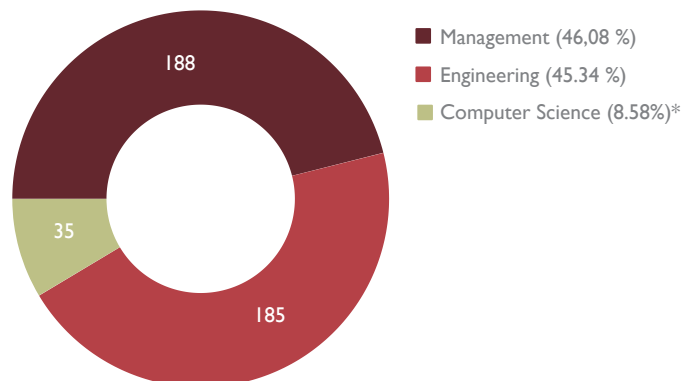


Number of scholarships awarded per diploma/per year



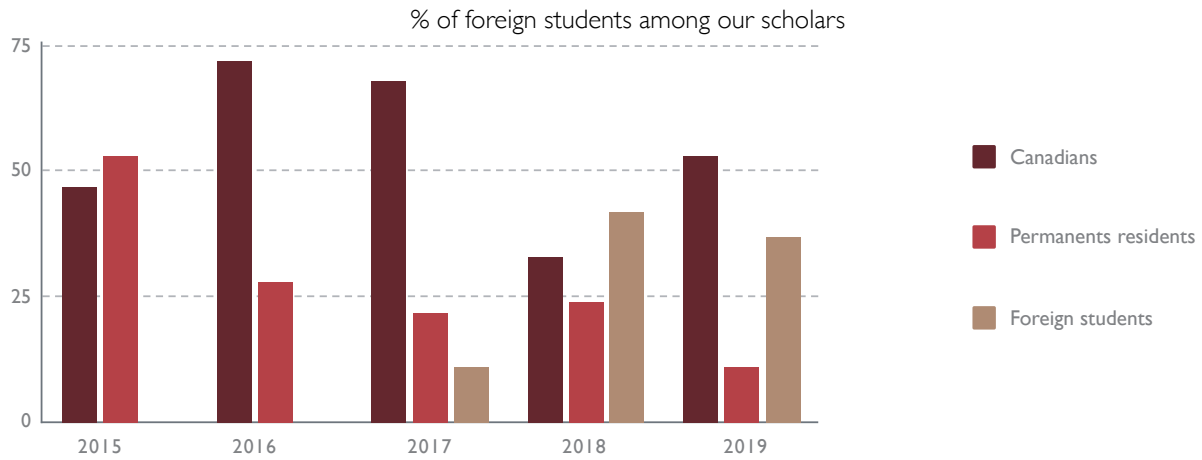
## PER PROGRAM

Number of scholarships per program awarded since the creation of the Foundation



\*Excluding scholarships awarded to Computer and Software Engineering Programs

## SOCIAL INDICATORS

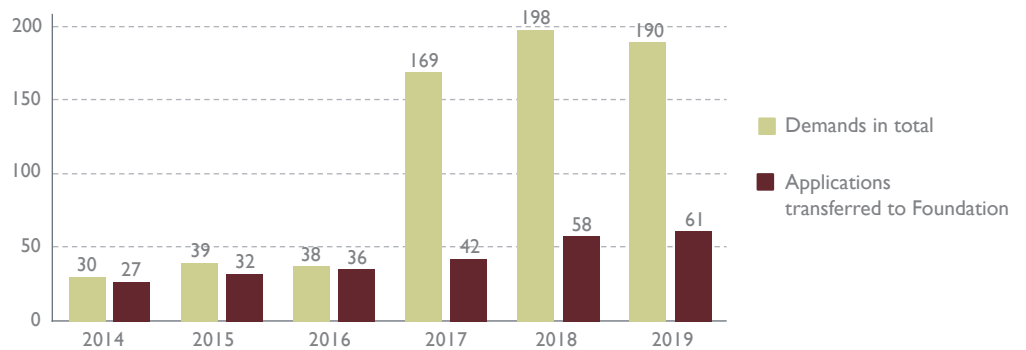


**190** Number of total applications to Arbour Foundation scholarships in 2019. A slight decline from 2018

**+ 400 %** Increase in the number of applicants to Arbour Foundation scholarships between 2016 and 2019

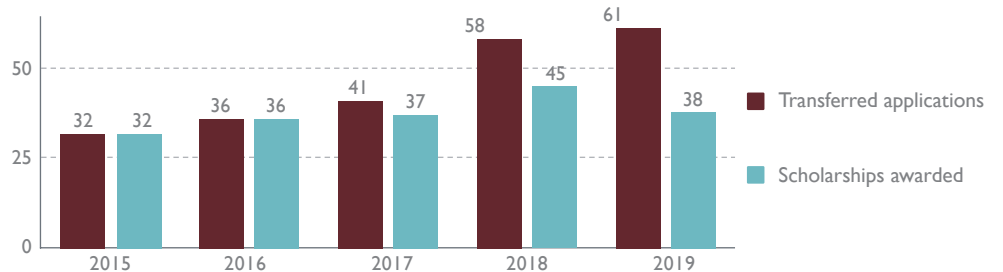
Applications received per university vs Applications transferred to the Foundation

Approximately  
**30 %**  
% of applications received in 2019 transferred to the Foundation (vs 97% in 2016)



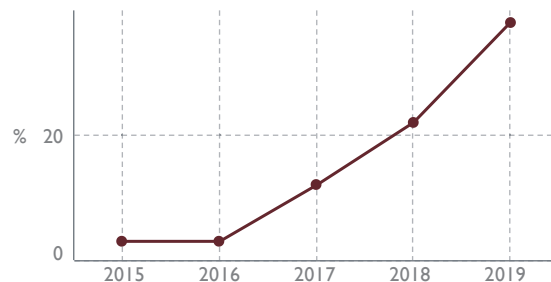
Number of applications transferred to the Foundation vs Number of scholarships awarded

**61**  
Number of selection interviews made in 2019 to award scholarships



Percentage of refusal rate by the Selection Committee

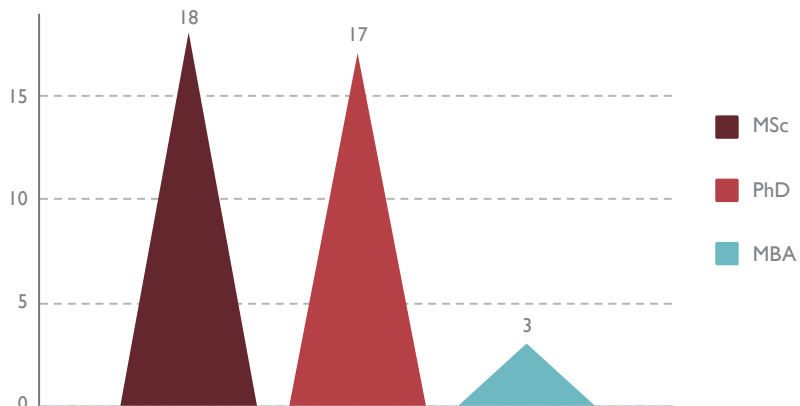
**38 %**  
% of rejected files by the Foundation in 2019 (vs 22 % in 2018)



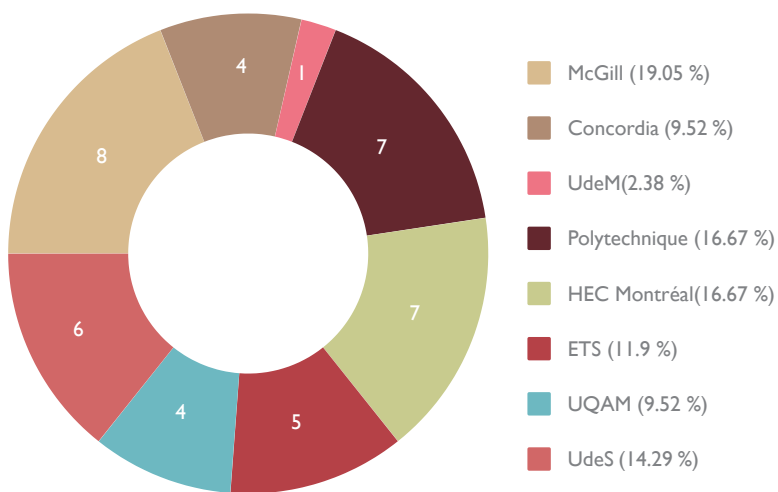
# REPORT BY THE SELECTION COMMITTEE

**38**  
scholarships awarded vs  
**61**  
interviewed  
candidates (61 demands)

Number of scholarships awarded per diploma in 2019



Number of scholarships awarded per university in 2019

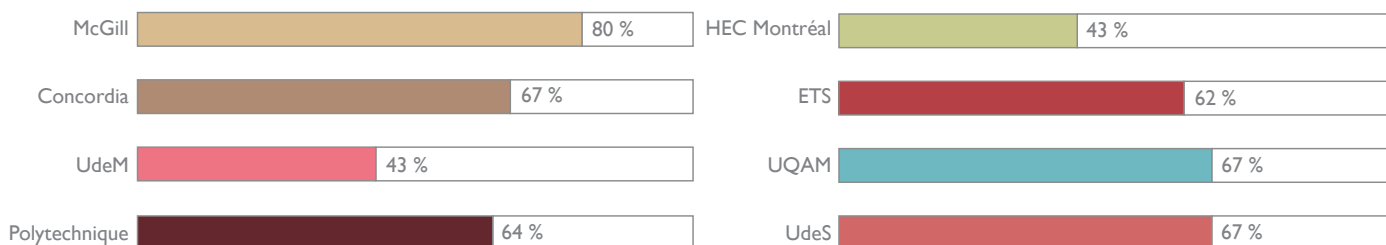


Tremendous work from the universities to complete initial selection of candidates

Over a week to interview all selected applicants

**13 on 38**  
Number of foreign students funded by the Foundation in 2019 (34%)

Acceptance rate to selection interviews (per university)





## OUR DONORS

The Arbour Foundation would like to sincerely thank and acknowledge  
the following donors for their financial support:

Raymond James® Canada Foundation	\$4,000
Alexandre Guilbault	\$1,000
Joel Kwan	\$1,000
Daniel Lavigueur	\$500

Did you know that some of our donors are Foundation alumni?

If you would like to support our mission and allow more students to benefit

from the Arbour Foundation scholarships,  
you can make an online donation by visiting

[www.fondationarbour.com](http://www.fondationarbour.com)

or you can contact Mrs Joëlle Dorais at

[fondationarbour@gmail.com](mailto:fondationarbour@gmail.com)



Anicet Charles Gabriel Lemonnier (1743 - 1824)  
*Reading of Voltaire's "L'orphelin de la Chine" in the salon of Madame Geoffrin, 1812,*  
oil on canvas, 51 x 77 pouces, Château de Malmaison Collection, France.

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