Program Concept Note

GERMAN CANADIAN CONCOURSE 2019

AIQ – Canada's and Germany's Artificial Intelligence Quotient
Building Synapses of Transatlantic AI Cooperation

www.GermanCanadianConcourse.org/gcc2019

PART 1
21 February 2019

Montréal	Berlin
McCarthy Tétrault	Embassy of Canada

PART 2
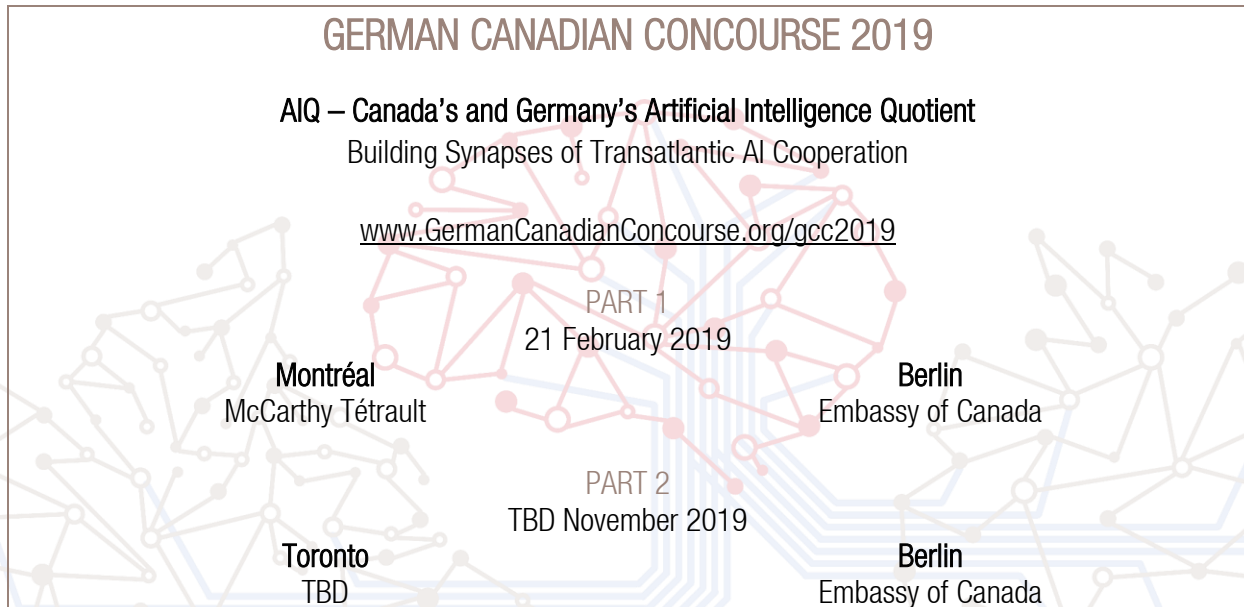TBD November 2019

Toronto	Berlin
TBD	Embassy of Canada

Event Theme

The discussion about the potential of **Artificial Intelligence** (AI) currently experiences a renaissance in various fields of innovation. In conjunction with rapid developments in the information technology sector, AI promises **unprecedented possibilities to automate decision-making processes**, to give new **insight into big data**, to **increase the degree of autonomy** in transportation and manufacturing and to enhance the **human-machine interaction**. AI, understood as the employment of a *"device and/or software that perceives its environment and autonomously takes actions that maximize its chance of successfully achieving its goals"*, is expected to bring an **economic benefit** to industries relying on automatization and data exploitation. It further has the potential to provide **social participation** to groups with limited access to innovation in rural and remote areas. If rolled out consequently, AI will have a significant **impact on the way our industries and societies will function** in the near future.

The 2019 German Canadian Concourse (GCC) will capture an overview of applications of AI in various fields. While the GCC can by far not cover all aspects of AI, it aims at addressing the most relevant disciplines for Canada and Germany and takes a close look at technological challenges and innovative potential, economic benefits, regulatory framework, political initiatives and societal/sociological impacts. The growing relevance of Artificial Intelligence in different domains of innovation will be reflected by devoting two symposia, one in February (GCC 2019/1) and one in November (GCC 2019/2), to the discussion of AI.

Both GCC 2019 conferences will investigate the **readiness of Germany's and Canada's industry and research infrastructure for more Artificial Intelligence** and their approaches to implement AI into core industrial and societal processes. We will compare initiatives paving the way to increase the **"Artificial Intelligence Quotient", AIQ**, of the two countries and we will look into economic opportunities for business applications related to AI. As always, the GCC will contrast visions with concerns, technological state of the art with policies; the GCC will showcase existing cooperation between Canada and Germany on the subject-matter and it will help identifying potential for future transatlantic collaboration. The discussion will be along the following pillars:

- **Technology cooperation** – Existing industrial and research collaboration and areas for expansion
- **Commercialization and entrepreneurial eco-systems** – Business models and economic opportunity for growth in new and related business eco-systems
- **Political setting** – Comparison of governmental initiatives to foster AI and related funding schemes
- **Regulatory aspects and security** – Comparison of legislation and regulations in both countries
- **Social and environmental impact** – Social acceptance and benefit, social participation

Thematic Focus of GCC 2019 – Part 1

The first edition of the 2019 German Canadian Concourse will kick-off the AI discussion in **February** with the following thematic focus:

- **AI Landscape in Canada and Germany** – This conference part will feature a comparison of the two eco-systems in Canada and Germany including an overview of the key players and major trendsetters in the field. It will highlight recent initiatives, existing infrastructure for research and innovation, governmental and private investment, regulatory and ethical aspects. Central elements of the discussion will include:
  - Canada's AI supercluster initiative for AI in supply chains and the Pan-Canadian AI strategy as governmental commitments for advancing Canada AI competence
  - Germany's public private partnership DFKI (German Research Centre for AI) as a platform to transfer AI research into industry
  - Impact of the EU General Data Protection Regulation (GDPR) on the competitive position of Germany (and Europe) for developing and validating AI solutions
  - Montréal's leading role in promoting an ethically responsible development of AI
  - Comparison of Canada and Germany with other aspiring nations to lead the AI movement
- **Certification of AI: Standards for Collaboration** – At the example of autonomous driving (and autonomous mobility in general) we will discuss the aspect of Artificial Intelligence applications in (safety) critical environments. The discussion will address the need to find standardization and certifications methods to verify the safe behavior of complex systems relying on artificial intelligence which per se is not deterministic. Central aspects will be:
  - Approaches to introduce certification methods in Germany and Canada
  - Challenges imposed by regulations for development and testing of autonomous vehicles
  - Cybersecurity and safety aspects
  - Standardization as enabler for economic exploitation of AI solution and transatlantic cooperation

  This part is deliberately chosen close to the topic of the 2017 GCC on <u>Ascent of Autonomous Flying</u> to carry over elements related to certification of unmanned aerial vehicles.

Thematic Focus of GCC 2019 – Part 2

The thematic content of the second edition of the 2019 German Canadian Concourse in **November** is currently under development.

GCC Format

Both 2019 GCCs are continuing the successful bi-locational German Canadian Concourse format, hosting **simultaneously** at **Concourse Hubs in Canada and Germany**. The event language will be English at both Hubs. In Germany, the event will take place in Berlin at the Embassy of Canada for both events (February and November). The GCC 2019/1 conference session in February will be in Montréal, hosted by the law firm McCarthy Tétrault; the GCC 2019/2 in November will be in Toronto. The alternation of conference locations in Montréal and Toronto reflects the importance of both cities as AI centres of expertise.

The German Canadian Concourse program features three distinct elements:

- **Transatlantic Symposium** – the conference part of the GCC, which connects both Hub locations via a video link for a truly transatlantic conversation. The video stream is also accessible online free of charge during the event and made available for download following the event on the GCC website.
- **Field Trip** – visiting a local partner organization/company allowing a practical insight into the subject-matter
- **Networking Reception** – hosted by partner organizations

Canada's Ambassador in Berlin and **Germany's Ambassador** in Ottawa are the **patrons** for the German Canadian Concourse programme. The GCC series was initiated in October 2012 by the **Canada Meets Germany Network (CMG-NET)**. Based on the interdisciplinary professional expertise of its network, the CMG-NET assumes the programmatic management of the GCC.

Conference Target Audience

The conference addresses companies, organizations and individuals interested in the Canadian-German exchange and, in particular, in a review of AI-related initiatives in both countries in relation to technological, legal, social and economic aspects. Due to the interdisciplinary nature of the GCC and the diverse range of applications of AI, we expect our speakers and audience from various professional backgrounds, such as:

- Automation of industrial process, robotics, human-machine collaboration;
- AI-based design process;
- Developers of autonomous transport solutions (automotive, aerospace, maritime, rail systems);
- Big data analysis and exploitation;
- Application of AI technologies in critical industries (eHealth, Fintech, energy);
- Environmental monitoring, situational awareness, reconnaissance based on AI;
- Social interaction (HR processes);
- Entrepreneurs/businesses looking to commercialize AI-related products and services;
- Government representatives, politicians, lawmakers on government support programs;
- Researchers active/interested in the field of AI;
- Professionals using and/or interested in AI technologies;
- General public with special interest in technology innovation and/or German-Canadian exchange.

We expect 70-90 people to attend the GCC in Berlin and 70-90 attendees in Montréal. The conference language is English.

Objectives of the Conference

The objective of the GCC 2019 is to provide:

- An overview of existing transatlantic exchange in the applicable field;
- A platform to connect and form new or strengthen existing relationships;
- A physical and virtual space to enable new ideas for collaboration;
- Material to underpin and spur action in transatlantic relations.

Key components of the conference that contribute to achieving these objectives include:

- Customized programming based on stakeholder input;
- Networking opportunities during and after the conference;
- Match-making (upon request);

Outline of the Conference Topic

Artificial Intelligence en Vogue

The topic of Artificial Intelligence (AI) is receiving growing attention over the past few years. The concept of AI is not new; in fact, the idea that machine can doubt human behavior and decision-making using sophisticated sensorics, robotics and computational means of adapting to changing situations goes back to the 1950s to 1970s. However, with recent achievements in the information technology sector, the added value of AI, sometimes also referred to as computational intelligence, is recognized as a potential gamechanger in many fields.

Artificial Intelligence has become a buzz word in the public discussion and naive perceptions of AI range from new computational solutions (which are simply more performing than existing algorithms) to robots with a human-like mind and appearance (as depicted in Hollywood movies). For the sake of dis-ambiguity, we shall understand under AI *"device and/or software that autonomously perceives its environment and takes actions that maximize its chance of successfully achieving its goals"*.

The AI Landscape – Germany

The venture capital firm Asgard has analyzed the German AI landscape and put it in comparison with AI activities around the globe, [1]. This research concludes that Germany is the second-strongest AI ecosystem

inside Europe while Berlin is home to 54% of all AI companies in Germany and as such is the fourth largest AI hub globally (after the Silicon Valley, London and Paris). According to the report, North America is leading the AI trend with approx. 50% more companies than in Europe.

Asgard has mapped the German AI landscape by identifying start-ups in the field of Artificial Intelligence and grouping them by industries and applications. The largest contributions made to AI (accounting for 48% of all German AI start-ups) can be found in the following areas:

- Customer support
- Customer communication
- Sales & marketing
- Software development
- Computer vision / Image recognition

Other important fields are

- eHealth
- Process automation
- Robotics
- Human resources
- Fintech

The Asgard report considers the European AI landscape still in its infancy and sees a further strengthening the European and German AI landscape through strong start-ups in new sectors and markets as well as by fostering a healthy ecosystem of the European local AI scenes.

A report by the "Applied AI" initiative of Technical University Munich also identifies Berlin and Munich as the main hubs for AI start-ups in Germany with Hamburg coming in third place. According to Applied AI, this strong concentration of AI start-ups in these metropolises makes it hard for companies in rural areas to win AI experts since those tend to prefer working in urban contexts. This is also reflected in the finding that only 15 percent of German companies apply AI in their production (refer to Canada's initiative to boost AI in supply chain, [11]). As a result, Germany is lagging behind in comparison to countries such as the US or China. But initiatives to foster the development and application of AI in Germany are on the rise. In Berlin, for example, the German Startup Association has – on the occasion of CEBIT and together with Intel – only recently launched its "Platform for AI". Under the patronage of Intel, the platform is meant to bring together companies developing innovative AI solutions as well as companies whose business model is based on AI. Also, the yearly conference "Rise of AI" taking place in Berlin is putting the topic on the agenda and proclaiming the "Golden Age" of AI.

Governmental Initiatives – Germany

The new German federal governm ent is working on an action plan to develop the national AI landscape. This initiative aims at the establishment of clusters with the purpose to link universities, research institutes and industry to channel their AI-related activities to make the German ecosystem attractive for investors and professionals. The process is still in its early stage and has not yet developed the same momentum as similar governmental initiatives on the Canadian side (see below). The goal of Germany's Minister of Education and Research, Anja Karliczek, is to compete with China and the US in the field of Artificial Intelligence. To this end, the federal government is investing 30 Mio EUR into the four newly created competence centers for machine learning in Berlin, Munich, Dortmund and Tübingen, [2].

Minister Karliczek is responding thereby to open criticism from leading German research chairs that Europe is risking falling behind China and the US who are investing significantly more into the development of their respective AI sectors. In particular the US American AI sector offering lucrative career perspectives for top researchers seems to cause a brain drain for the European landscape. The Minister is referring to the strategic role of the German Research Centre for Artificial Intelligence (DFKI) which is the world's largest non-profit organization for researching AI with one of the largest revenues in their field. DFKI has institutes in Kaiserslautern, Saarbrücken, Bremen and Berlin.

Meanwhile, the German government is working towards improvement of the social acceptance of AI. The Federal Ministry of Justice and Consumer Protection reviews the obligation to make algorithms behind AI applications openly accessible for a better protection of consumers' rights [3].

These efforts are accelerated through the founding earlier this year of the German professional association for AI, the KI-Bundesverband e. V. (www.ki-verband.de), representing some 50 SMEs, innovative companies, start-ups and experts having a clear business focus on AI. The associations agenda is to develop an innovation-friendly regulatory framework which provides legal certainty; fostering the use of human-centred AI technology through funding programs and business incubation; education of the public for a better awareness of risks and opportunities of AI; and the derivation of concrete action plans by means of a political advisory panel and an AI committee of experts from the private sector, [4].

Germany's efforts are imbedded into the European AI context. The European Union is planning to raise investments into the public and private AI sector by at least 20 billion EUR by 2020. While the EU has earmarked an additional 1.5 billion EUR from the Horizon 2020 research frame program for AI activities, it is expected that investment from private-public partnerships will be stimulated. Further, the EU will provide access to data in the key area transportation, health (in particular eHelath) and research to stimulate the growth process, [5].

In an article of Politico Europe (politico.eu) entitle "Europe's AI delusion", the European AI agenda is critically reviewed in the light of Chinese developments in this field, [6]. The author, a former Europe minister for Portugal, claims that an obvious advantage of China is their almost unlimited access to user data (due to the sheer number of internet users in combination with fewer data protection rules); the author further fears that Europe and (North) America loose ground on development of better algorithms and computer power. The main criticism of the European AI strategy is that it is "fully defensive" and "first considers how AI raises new threats and then goes on to discuss the opportunities". The EU strategy is perceived to be primarily about AI ethics while the ways of boosting Europe's AI capacity takes lower priority.

The AI Landscape – Canada

In a recent opinion, it is criticized that, among others, Canada – as well as Germany – were "not good enough" in the race for AI, [7]. Nonetheless, Canada is described as being "not an unknown player". Also, Toronto is ranked as an AI site following the global top ten cities.

Just recently, Canada has proactively launched several initiatives to develop its AI landscape. In 2017, the Pan-Canadian Artificial Intelligence Strategy was launched "to retain and attract top academic talent, and to increase the number of postgraduate trainees and researchers studying Artificial Intelligence and deep learning [...]", to "promote collaboration between Canada's main centres of expertise [...]", and to "position Canada as a world-leading destination for companies seeking to invest in artificial intelligence and innovation" (Budget 2017, Government of Canada [8], [9]). The Pan-Canadian Artificial Intelligence Strategy is administered through CIFAR, the Canadian Institute for Advanced Research, and promotes collaboration between the Alberta Machine Intelligence Institute (AMII) in Edmonton, the Vector Institute in Toronto, and the Montréal Institute for Learning Algorithms (MILA).

The objectives of the Pan-Canadian Artificial Intelligence Strategy are:
- increase the supply of AI talent,
- attract industry partnerships,
- be a catalyst for startups,
- accelerate Alberta business, and
- encourage AI literacy.

As a centralized hub for "everyone in the AI community to share and take pride in our accomplishments", the Canada.ai web platform was built in January 2018, [10]. The online platform features, e.g., a comprehensive directory of the AI landscape in Canada. The platform is built by NEXTCanada, a national non-profit organization.

Governmental Initiatives – Canada

As part of its $950-million Innovation Superclusters Initiative, the Canadian government has awarded substantial funds to the AI-Powered Supply Chains Supercluster (SCALE.AI) in February 2018 for the creation of a business-led consortium dedicated to building the next-generation supply chain and boosting industry performance by leveraging AI technologies, [11].

A business-led consortium, SCALE AI, will drive economic growth, bolster Canada's leadership in the global innovation race, create highly-skilled jobs, and accelerate the adoption of AI-powered technologies.

Just recently, on June 7, 2018, the Pond has been bridged by Canadian Prime Minister Justin Trudeau and French President Emmanuel Macron making a commitment to engage experts across all areas of research to better understand how to develop AI technologies that benefit all, [12].

Legal / Regulatory

AI is also a challenge for legal and regulatory concepts, which focus on human behavior and liability of humans for their decisions. Today, lawmakers need to discuss how to adapt a traditional understanding of responsibility to tomorrow's world, where intelligent machines will decide and will inescapably make a mistake from time to time.

Summary

In summary, both Canada and Germany are emerging countries with respect to AI. As is apparent, there are commitments from both sides to further develop the respective AI landscape, as well as reach out and connect with the respective other landscape.

Similar to a neuronal circuit, i.e. a population of neurons interconnected by synapses, a transatlantic network of AI competencies can increase an overall "Artificial Intelligence Quotient". Connecting the AI competencies across the Atlantic is thus a promising approach to boost AI developments synergistically for both landscapes involved. It is thus the object of the German Canadian Concourse to provide a platform for a transatlantic cooperation in the shape of a matrix for synapses to connect.

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Event Program

Building on the successful program format of the past years, this year's GCC will continue to offer a structured full-day program to participants on both sides of the Atlantic.

Conference Day – 21 February 2019 / TBD November 2019
"AIQ – Canada's and Germany's Artificial Intelligence Quotient"

	Berlin	Montréal (February) / Toronto (November)	
Morning	**Field Trip** Hosted by **Smart Data Forum**		
	Lunch Break Lunch served at Embassy of Canada		
Afternoon	**Transatlantic Symposium** (connected via video link) Hosted at **Embassy of Canada** in Berlin and **McCarthy Tétrault** in Montréal / **TBD** in Toronto The conference will be opened by welcome notes from German and Canadian Embassy officials. **Speeches** of company and organization representatives introducing their engagement in the field of AI will each be followed by a thematically related **panel discussion**. Panelists will discuss with participants various aspects of German-Canadian aspects of Artificial Intelligence.		*Morning*
Evening	**Networking Reception** The event will be concluded during a reception at the **Permanent Representation of the State of Bremen** giving the opportunity for networking elements.	**Lunch Break** Lunch served at symposium location	*Afternoon*
		Field Trip Hosted by the **TBD**	
		Networking Reception The event will be concluded during a reception at TBD giving the opportunity for networking elements	*Evening*

Funding

The German Canadian Concourse is run by Canada Meets Germany Network e. V. (CMG-NET) as a not-for-profit event. The costs of the conference will be mainly covered through sponsor partnerships and partially through CMG-NET funds. For more details on sponsorship opportunities see the Sponsorship Concept.

Sponsors, Partners and Patrons

Organizing Body

## Canada Meets Germany Network e. V.
www.CanadaMeetsGermany.Net

The GCC is a brand of Canada Meets Germany Network e. V. (CMG-NET), a non-profit association registered in Germany. CMG-NET operates the German Canadian Concourse in cooperation with institutional and corporate partners and is responsible for the event and program.

Patrons

Ambassadors of Canada and Germany

The German Canadian Concourse runs under the patronage of the Ambassadors of Canada and Germany. "Kanada Haus", the premises of the Canadian Embassy in Berlin, is home to the German hub of the GCC. The German Consulate General in Montréal represents the Ambassador during GCC events in Québec.
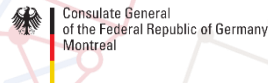
Cooperating Partner

Ministère de l'Économie et de l'Innovation (MÉI) Québec
www.economie.gouv.qc.ca

The Ministry's mission is to support business growth, entrepreneurship, science, innovation, export trade and investment. The MÉI is coordinating the elaboration and the implementation of the digital strategy. MÉI together with the Québec office in Munich have become cooperating partners of the 2019 GCC series advising the GCC steering committee on AI developments.

Partners and Session Hosts (to be completed)

Contact

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Follow us: www.linkedin.com/company/german-canadian-concourse
                               www.twitter.com/GerCanConcourse