

## **Bahira Abdulsalam PhD PEng**

Address 3204-85 Thorncliffe Park Drive Toronto Ontario Canada

Cell Phone 1(647)785-3729 Email [bahira.abdulsalam@compositeinfrastructure.com](mailto:bahira.abdulsalam@compositeinfrastructure.com)

### **PART 1 - PERSON PROFILE**

Date April 1<sup>st</sup> 2019

Abdulsalam, Bahira, A., A., PhD P.Eng.

FOUNDER AND MANAGING DIRECTOR OF CIISOLUTION COMPOSITE  
INFRASTRUCTURE INNOVATION SOLUTIONS CORP.

PROFESSOR OF CIVIL ENGINEERING AT CANADORE COLLEGE@STANFORD

### **ACADEMIC BACKGROUND**

Post Doctoral Fellow Department of Civil Engineering Western University London Ontario  
Canada 2015-2016

Visiting Research Scholar University of Arizona Tucson Arizona USA 2015-2016

Doctor of Philosophy in Civil Engineering

Universite de Sherbrooke Sherbrooke Quebec Canada 2007-2014

Masters Degree in Civil Engineering Cairo University Faculty of Engineering Cairo Egypt 2001-  
2006

Bachelor Degree in Civil Engineering Cairo University Cairo Egypt 1985-1990

### **AREA(S) OF EXPERTISE**

Civil Engineering, Structural Engineering, Composite Materials, Infrastructures, Materials,  
Reinforced Concrete, Composite Manufacturing, Research and Development, Experimental  
Testing, Entrepreneurship.

Research Subject Code(s)

2001	Materials structure, properties and testing
1701	Engineering design
1702	Advanced manufacturing
1105	Structural materials
1001	Construction engineering and management

## ACADEMIC, RESEARCH AND INDUSTRIAL EXPERIENCE

### **Founder and Managing Director CIISolutions Composite Infrastructure Innovation Solutions Corp..... January 2018-current**

Designing, creating, and managing innovative growth strategies, to provide engineering services and to develop innovative products and solutions for extending the service life for Infrastructures. Personally engaging with prospective investors, customers, and strategic partners Experts in the design of fiber-reinforced polymer (FRP) rebars for concrete structures and strengthening systems using Fiber Reinforced Polymer Externally Bonded Systems.

### **Professor of Civil Engineering at Canadore College @ Stanford ..... June 2017- Current**

Inspiring hope, and instilling the passion of learning, critical thinking Innovation and creativity in engineering students and preparing them to become lifelong learners and leaders who will provide great contributions in the civil mechanical and structural engineering profession and building better communities. Demonstrated outstanding experience in successfully contributing in developing the academic foundations of the college engineering students. Obtained the talent and expertise that helps in training innovative engineers and giving them relevant knowledge to have successful professional future. Committed to education and she is consistently looking to apply technological advancements and the most up-to-date strategies. She has the capability to influence students and identify their needs. Teaching construction project management and various engineering courses for graduate and undergraduate engineering students and mechanical and civil engineering courses in different college campuses Ontario.

### **Associate at Business Process Services Cognizant Technology Solutions. January 2018-June 2018**

Drive continuous improvement programs to improve the experience for customers, teammates and shareholders. Day to day responsibilities will include supporting the Operations teams by providing reporting, and performance management support to meet the strategic goals of the department. Supporting reporting needs, Provide data to support setting targets for each group Documentation control standards. Create a comprehensive strategy for business operations. Partner with Policy/Quality team to standardize and review content templates and scoring. Independent problem solving and decision making grounded in insights, facts and aligned with the strategic priorities.

**Post-Doctoral Fellow Western University London Ontario Canada January 2015-December 2017**

Tested and participated in the development of a patent pending technology to reduce the deterioration of the aging underground pipe network that emerges as a critical problem. The program included a revolutionary trenchless structural rehabilitation technique. In this technique Innovative honeycomb-FRP Composite Sandwich (HCS) are used for retrofitting concrete pipes (InfinitPipe™). Applied on-site manufactured joint-free pipe technology to accomplish the concrete pipe repair mobile manufacturing unit (MMU).

**Visiting Research Scholar University of Arizona Tucson Arizona USA .....August 2015-December 2017**

Investigated resins with different chemical composition to obtain the desired properties. Investigated different composite curing methods. Provided solutions to obtain optimum manufacturing speed for composite pipes. Tested composite sandwich panels and composite pipes.

**Quake Wrap Company Tucson Arizona USA .....August 2015-December 2017**

Dr Abdulsalam acquired extensive experience liaising with diverse government agencies, industry, and academia. Dr Abdulsalam developed strategic opportunities for the business operations and creating and implementation research and development plans. Collaborated with QuakeWrap Inc., in the design and installation of, Stiff pipe and fiber reinforced polymer (FRP) products for repair and strengthening of RC structures. Created innovative products that help clients achieve repair and retrofit of their infrastructure with higher quality, faster construction time and at a lower cost. Investigated customer need in various markets to insure the success of the new pipe product. Prepared a business plan for a new pipeline company and establishing a new composite company for pipelines. Coordinated between the University of Arizona USA, Industrial partners in Ontario Canada and Arizona USA and University of Western Ontario in Canada, funding agencies, customers, and manufacturers.

**PhD Candidate, Project Engineer & Research Associate | University of Sherbrooke Qc Canada NSERC Industrial Research Chair in FRP Reinforcement for Concrete Structures**

Designed and constructed a model concrete bridge deck slab reinforced with Fiber Reinforced Polymer Rebars using the Canadian Bridge Design code in collaboration with the Ministry of Transportation of Quebec MTQ to evaluate the use of Fiber Reinforced Polymer Bars in bridge construction. Established new shear model for FRP/RC elements through experimental and analytical investigations. Dr Abdulsalam Participated in the success of the activities of the NSERC Industrial Research Chair in FRP Reinforcement for Concrete Structures projects by participating in Innovations on FRP Bars. Developed testing protocols for FRP rebar Reinforcement. She investigated the Long-Term Behaviour and Field Durability of FRP

Reinforcements in Concrete Structures. She assessed the tensile properties' of Glass, Carbon and FRP Bars according to Canadian and International Codes and Specifications.

## **PART 2 – CONTRIBUTIONS**

Some of the most significant contributions are as follows

1-

### **2- Axial Behaviour of Concrete Elements Reinforced with Glass Fiber Reinforced Polymer Rebars**

**June 2018**

A percentage of North American bridges have been found to be structurally deficient. While the number of structurally deficient bridges is decreasing, the average age of American bridges continues to rise and many of the nation's bridges are approaching the end of their design life. The research investigated Fiber Reinforced Polymer (FRP) Bars which are non-corrosive and currently used as reinforcement for Infrastructure applications. Public authorities in North America have now included FRP as a premium corrosion resistant reinforcing material in their corrosion protection policies. Our research was concerned with the tensile behavior of silica fume concrete tie members. Individual concrete ties were reinforced with a single glass fiber-reinforced plastic (GFRP) bar protruding through the tie axis. GFRP reinforcing bars with different surface properties, diameters, and mechanical properties were researched to determine the effects these parameters would have on the failure characteristics and mechanical properties of concrete ties. Sand-coated, grooved, and helically wrapped GFRP bars were used and were furthermore found to influence the load carrying capacity of the concrete ties, as well as their cracking-patterns. Optical microscopy was performed for specimens sawn through their cross-sections revealed delamination of resin-rich outer layer of the rebars, from the rebar cores. Internal delamination of the rebar is considered a bond failure mechanism that controls the post-cracking behavior of the concrete tie members. Test results indicated a consistent trend in all tested samples that indicates a slight reduction in the ultimate tensile strength of GFRP bars embedded in concrete prisms.

### **3- Externally bonded FRP Sheets for Masonry Heritage Structures.**

Glass-fiber-reinforced polymer system provides significant increase in out-of-plane load-carrying capacity when externally bonded to limestone masonry walls. Anchorage of GFRP sheets to limestone masonry is essential for preventing the premature failure due to GFRP debonding and increasing the ultimate out-of-plane capacity and ductility of masonry walls. Using GFRP anchor spikes is an effective anchorage method for GFRP sheets to limestone masonry. Although tensile rupture and sliding shear failure are brittle undesirable modes of failure. Anchored GFRP strips restrain the broken limestone units from collapse at failure of

the wall which will most probably cause injury and hazard to life. The efficiency of wall strengthening decreases by increasing the axial load level.

## 2. Research Contributions and Practical Applications

DR Abdulsalam is working on the development of FRP rebars that will result in an improved FRP rebar product through the company CIISolutions and establishing business relationships.

## 3. Other Evidence of Impact and Contributions

### • Awards;

Nominated as one of the best 50 women in engineering by the Women's Engineering Society (WES) International Women in Engineering Day (INWED) UK England ..... 2018

InfiniPipe®: A Breakthrough for the Pipeline Industry winner in Infrastructure Vision Challenge 2050 Dream Phase by Heroex and the Association of American Manufacturers <https://www.herox.com/>..... 2016

Mitacs-Accelerate Two years Industrial Postdoctoral Fellowship..... 2015-2016

Medal of Merit Leonard de Vinci (Médaille du mérite Léonard de Vinci).....2011

Bourse des ingénieures-professeures et ingénieurs-professeurs de l'Université de Sherbrooke....2010

ACI Sponsors Scholarship (Commanditaires) .....2009

### **Fellowships**

• Obtained four years PhD fellowship at NSERC Research Chair in Innovative FRP Reinforcement for Sustainable Concrete Infrastructure.....2007-2015

• Obtained two years of Mitacs Postdoctoral research fellowship at the department of civil engineering University of Sherbrooke Quebec Canada..... 2016-2017

### • **Membership on committees, boards, or policy-making bodies;**

Associate member ACI 440 (Fiber Reinforced Polymer) committee.....2007-2017

Member of the Civil Engineering Department Committee, University of Sherbrooke...2007-2008

Graduate studies committee, civil engineering department, University of Sherbrooke. 2007-2008

CPES Committee civil engineering department, University of Sherbrooke.....2008-2009

Selection of the dean committee dean University of Sherbrooke faculty of Engineering.....2009

- **Consulting activities;**

Worked as a structural designer and performed consulting engineering services on various design projects related to design of buildings and bridges as well as structural repair and strengthening while working with Misr Consult consulting engineering office and the Ministry of Industry in Cairo Egypt, with Dr Ibrahim Mahfouz consulting office on some of the major structures in the Middle East.

- **Public awareness/education;**

Initiated public awareness for the membership and process of joining the professional engineering bodies in Quebec by organizing seminars in collaboration with Orders des Engineer des Quebec.

Worked on public awareness campaign about advanced composite materials and the potential for upgrading and saving infrastructures in Cairo Egypt in collaboration with the Egyptian code committee.

**Developed several collaborations including**

- 1- Collaboration between the University of Western Ontario and University of Arizona and QuakeWrap Company which resulted in Mitacs Postdoctoral fellowship and development of patent pending application and the creation of a pipeline company as well as the engineering company founded by the applicant.
- 2- Collaboration between CIISolutions the company founded by the applicant and the University of Edinburg in England that is expected to result in a new research in the development of new FRP system.
- 3- Collaboration with the consulting office of Dr Ibrahim Mahfouz in Cairo Egypt.
- 4- Established collaboration between the NSERC research chair of FRP and the Egyptian Ministry of Foreign affairs and to support the academic development of the chair activities.
- 5- Formed a Research Group between members from the University of Sherbrooke, University of Concordia, and Western University on Concrete Research.

**4. Contributions to the Training of Highly Qualified Personnel (HQP)**

Supervised Doctoral and Postdoctoral research work of Sara Boudali on the behaviour of concrete recycled aggregates in developing self-compacting concrete.

**5. Publications**

## **1. Journal Publications**

- 1- Abdul-Salam B., Farghaly A., and Benmokrane B., (2016). “Shear Failure Mechanisms of FRPRC Slabs” *Construction & Building Materials*, Volume 127, no 30, Pages 959–970.
- 2- Abdul-Salam, B., Ali A., (2015). “The Preservation of Historical Masonry Heritage Structures Using Advanced Composite Materials” *International Journal of Engineering Sciences and Research Technology* Volume 4, number 8, Pages 14-24.
- 3- Boudali, S., Soliman M., Abdul-Salam B., Ayed, K., Kerdal D., Poncet S., (2017) “Microstructural properties of the interfacial transition zone and strength development of concrete incorporating recycled concrete aggregate.” *World Academy of Science, Engineering and Technology, International Journal of Civil, Environmental, Structural, Construction and Architectural Engineering* Volume 11, No. 8, Pages
- 4- Boudali, S., Kerdal, D., Ayad, K., Soliman A., Abdul-Salam B. and Poncet S., (2016). “Performance of Self-Compacting Concrete Incorporating Recycled Materials under different Sulphate Environments” *Construction & Building Materials*. Volume 124, 15 October 2016, Pages 705–713.
- 5- Ali, A., Afifi, M., Abdul-Salam B., Haggag, H., El Hashimy, A., El-Sayed T., Mohamed H., (2015). “Performance Evaluation of One-Way Concrete Slabs Reinforced with New Developed GFRP Bars” *Materials Sciences and Application*, Volume 6, Pages 420-435.
- 6- Ali A., Abdul-Salam B., Mohamed H., and Afifi M., (2015), “Enhancing the Behaviour of FRP
- 7- RC Slabs Using Square FRP bars and Fiber Concrete” *International Journal of Civil and Structural Engineering*. Volume 6, No 1 Pages.

## **2. Technical reports and disseminations**

- 8- Ehsani, M., Paul A. Thomas, Abdul Salam, B., Wang, X., Vashaghian, H., Jensen M., (2016). “Quake Wrap Composite Pipes Experimental Investigation.” Technical Report Presented to Tucson Electric Power, Tucson Arizona USA.
- 9- Ehsani, M., Paul A. Thomas, Abdul Salam, B., Wang, X., Vashaghian, H., Jensen M., (2016). “Quake Wrap Sandwich Panels Experimental Investigation.” Technical Report Presented to Tucson Electric Power, Tucson Arizona USA.
- 10- Abdul-Salam B., Farghaly A., Gagne R., and Benmokrane B., (2010). “Bond cracking and tension stiffening of axially loaded concrete prisms reinforced with FRP bars” Department of civil engineering, University of Sherbrooke Quebec Canada.
- 11- Abdul-Salam B., El-Gamal S., and Benmokrane B., (2008). “Deflection and cracking of beams reinforced with GFRP bars” Research Report Submitted to the Department of civil engineering, University of Sherbrooke, Sherbrooke, Quebec Canada.





- 12- Abdul-Salam B., Benmokrane B., (2010). "Evaluation of concrete bridge deck slab reinforced with GFRP bars" Research Report submitted to the Department of Civil engineering, University of Sherbrooke, Sherbrooke, Quebec Canada.
- 13- Abdul-Salam B., Gagne R., and Benmokrane B., (2007). "Restrained Shrinkage Cracking of concrete reinforced with GFRP bars." Report submitted to the Department of Civil engineering, University of Sherbrooke, Sherbrooke Quebec Canada.

### **3. Conference proceedings**

- 1- Abdul-Salam B., Farghaly A. Gagne R., El-Safety A, Alam P., and Benmokrane B., (2018) "Behaviour of Concrete Prisms Reinforced by Various Types of Glass Fibre Reinforced Polymer (GFRP) Bars" Proceedings of the 10th International Conference on Short and Medium Span Bridges, SMSB – X , Quebec City, Canada Canadian Society for Civil Engineering, CSCE.
- 2- Boudali, S., Soliman, A., Poncet, S., Godbout, S., Palacios, J., Abdul-Salam, B. (2018). "Application of Agricultural - Waste Materials in Construction Applications: A Review (2018)", Proceedings of Fredericton Annual Conference. Montreal Quebec Canada, Canadian Society for Civil Engineering, CSCE
- 3- Boudali, S., Soliman, A., Poncet, S., Godbout, S., Palacios, J., Abdul-Salam, B. (2018). "Investigating Different Potential Applications of Agro-waste in Concrete", Accepted CSCE Fredericton Canada.
- 4- Boudali, S., Soliman A., Abdul-Salam, B., K Ayed, K Kerdal, S., Poncet, (2017). "Microstructural properties of the interfacial transition zone and strength development of concrete incorporating recycled concrete aggregate" International Conference on Civil, Environmental and Structural Engineering, At Vancouver, Volume: 19 (8) - Part I.
- 5- Boudali, S., Boukhatem B., Abdul-Salam B., Sebastien, P., Kerdal, D., (2016). "Artificial Neural Network Modeling of the Expansion Behaviour of Recycled Concrete Aggregate Under External Sulphate Attack". Workshop on External Sulfate Attack, 3-4 November 2016, LNEC – Lisbon, Portugal.
- 6- Abdul-Salam, B., Farghaly A., Benmokrane, B., (2013). "Evaluation of Shear Behavior for OneWay Concrete Slabs Reinforced with Carbon-FRP Bar."; In proceeding of: CSCE 2013 General Conference - Congrès général 2013 de la SCGC.
- 7- El-Gamal S., Abdul-Rahman B., Benmokrane, B., (2010). "Deflection Behavior of Concrete Beams Reinforced with FRP Bars" Proceedings CICE 2010 - The 5th International Conference on FRP Composites in Civil Engineering, September 27-29, 2010 Beijing, China.
- 8- Abdul Rahman, B., El Shafey N. Ghoneim M., and El-Degwey W. (2007). "GFRP Strengthening of Natural Masonry Walls Resisting Axial and Lateral Loads Using GFRP Anchor Spikes ", Proceeding of the 8th International Symposium on Fiber Reinforced Polymer Reinforcement for Concrete Structures University of Patras, Patras, Greece.





- 9- Abdul Rahman, B., and El-Shafey, N., (2005). "Out-of-Plane GFRP Strengthening of Natural Masonry Walls Enhanced Using Glass Fiber Reinforced Polymer Anchors", Proceeding of The Fourth Middle East Symposium of Structural Composites for Infrastructural Applications, Alexandria, Egypt.
- 10- Abdul Rahman, B. El Shafey N. and El-Degwey W. (2006). "The Use of Fiber Reinforced Polymers in Preserving Heritage Masonry Structures ", Proceeding of the 1st International Conference on Restoration of Masonry Heritage Structures, April 24-27, Cairo, Egypt.

#### **4. Book Chapters**

- 1- S. El-Gamal, B. Abdul-Rahman, & B. Benmokrane Book Chapter, (2013) "Deflection Behaviour of Concrete Beams Reinforced with Different Types of GFRP Bars In book: Advances in FRP Composites in Civil Engineering, Publisher: Springer-Verlag Berlin Heidelberg, Editors: Lieping Ye, Peng Feng, Qingrui Yue, pp. 279-282.

#### **6. Delays in Research Activity**

Delays of research activities, I took a parental leave during my PhD work starting January 2012 till May 2012 to deliver my child. Since 2015 till current I am a single mother. Between August 2015 till December 2017 I had to travel to Arizona USA for part of my research work activities and since June 2017 till current I have a teaching load to deliver courses at Canadore College at Stanford.

## LETTERS OF SUPPORT - EXCEPTIONS



Mohamed Lachemi  
President and Vice-Chancellor

December 7, 2018

To Whom It May Concern,

RE: Letter of recommendation for Dr. Bahira Abdulsalam

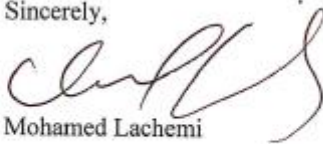
I am pleased to write a reference letter in support of Dr. Bahira Abdulsalam.

I know Dr. Abdulsalam from the time she was a doctoral student at Sherbrook University. I was then and continue to be impressed by her drive and passion for environmental sustainability and innovation—attributes she is putting to work at the company she recently founded, CIISolutions | Composite Infrastructure Innovation Solutions.

Ryerson University is a champion of innovation through entrepreneurship. In Dr. Abdulsalam I see an entrepreneur and civil engineer who adapts quickly, embraces new technologies and is focused on creating practical, forward-looking solutions to today's infrastructure challenges. She also brings both considerable technical capacity and strong relationship building skills to her new business.

I am excited for her new venture and endorse her as an effective partner and collaborator.

Sincerely,



Mohamed Lachemi



## THE UNIVERSITY of EDINBURGH

Parvez Alam, Ph.D., CEng, Doc., FIMMM

School of Engineering

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2.12.2018

### Letter of Support for:

*Professor Bahira Abdulsalam, CEO of the Composite Infrastructure Innovation Solutions Corp. (CIISolutions)*

I am delighted to write this letter of support for Professor Abdulsalam. I know Professor Abdulsalam as an academic collaborator with her Canadian company, CIISolutions. She has developed this company with the objective of providing high quality and innovative composite-material solutions to problems in the civil (and other) engineering sectors. To create momentum in the development of composites solutions in engineering, Professor Abdulsalam has enabled an extensive global network of experts in materials science, structural engineering, composites science and engineering technology. I have had direct involvement with Professor Abdulsalam for approximately one year and she has shown professionalism at every level of our industry-academic partnership. At present we are working together to generate funding for collaborative research into biomimetic engineering composites focusing on the effective dissipation of mechanical and dynamic energy to reduce component failure. I have no doubt that working with Professor Abdulsalam will strengthen product design using R&D driven, novel composite materials technologies.

I will be happy to respond to any further inquiries

Sincerely,

Parvez Alam



December 12 2018

To Whom It May Concern

Simpson Strong-Tie is the world leader in structural product solutions—solutions that not only help our customers, but help make structures safer and stronger. The company is recognized as the genuine connector brand in the residential construction industry, and also for its ever-expanding offering of shearwalls, moment frames and fasteners. In the last two decades, the company has expanded further with products for infrastructure, commercial and industrial construction, including mechanical anchors, adhesives and products that repair, protect and strengthen concrete and masonry.

Simpson Strong-Tie Composite Strengthening Systems (CSS) also provides efficient solutions for the structural reinforcement and retrofit of aging, damaged or overloaded concrete, masonry, steel and timber structures. The primary benefit of Composite Strengthening Systems versus traditional retrofit methods is that significant flexural, axial or shear strength gains can be realized with an easy-to-apply composite that does not add significant weight or mass to the structure. Many times it is the most economical choice given the reduced preparation and labour costs and may be installed without taking the structure out of service. When you are considering a repair or a strengthening solution, the composite material specified can greatly impact the overall performance and installed cost of the system. We offer a complete line of carbon fiber and E-glass fabrics, precured carbon laminates, carbon grids, epoxy saturants, and FRP anchors that are designed to the specific requirements of each project.

I had the pleasure to meet with Founder of CIISolutions Composite Infrastructure Innovation Solutions corporation, Dr. Bahira Abdulsalam. We are pleased to consider benefiting from her company design solutions for non-traditional structural repair problems. We believe that the company is providing very unique services and we would be pleased to use her expertise to help with our composite strengthening designs. We are glad to collaborate with the team of experts of Licenced professional engineers and experts in the company because of the unique technical background and skills. This will help in design services, field support and training during the entire project cycle.

Sincerely,

**Doug McCutcheon, C.E.T.** | Technical Sales Representative – Eastern Canada | Concrete Construction Products |

**Simpson Strong-Tie Canada, Limited** | 5 Kenview Boulevard, Brampton, Ontario, L6T 5G5 |

Tel: 905-458-5538 | Fax: 905-458-7274 | Cell: 647-465-2577 | Toll Free: 800-999-5099 |

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**CONSULTING ENGINEER PROF.  
Prof. DR. IBRAHIM MAHFOUZ**



**المهندس الاستشاري  
الأستاذ الدكتور / إبراهيم محفوظ**

**DR. IBRAHIM MAHFOUZ-  
CONSULTING ENGINEERING OFFICE  
REGISTRATION # 603- STRUCTURAL ENGINEERING**

Dear Dr Abdulsalam

In reference to our phone communication I am pleased to enclose a detailed statement of your association and work activities with my consulting office in Cairo Egypt as well as the joint activities with your Canadian Established Business "CIISolutions Composite Infrastructure Innovation Solutions Corp".

Sincerely

Ibrahim Mahfouz, PhD Peng.

*Chair of the Egyptian Code Standing Committee for the Use of FRP in The construction Fields and Vice Chair of the Egyptian Code Standing Committee for the Design and Construction of Concrete Structures  
Voting Member ACI Committee 440*

Building # (131)-EMTEDAD GHARB AL-GOLF-NEW CAIRO فيلا (131) – إمتداد غرب الجولف القاهرة الجديدة

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6 طريق صلاح سالم- مصر الجديدة



### To Whom it May Concern

This is to certify that Dr Bahira Abdulsalam Founder and managing director of CIISolutions Composite Infrastructure Innovation Solutions Corp". Has been closely involved as a vice chair of my consulting engineering firm in various activities since the year 2000. Her activities included but not limited to the consultation and design and preparation of construction documents of various projects such as Kuwait Stadium strength evaluation, the Design and construction of the Canadian Embassy Building in Cairo Egypt, Strengthening of the Holy Haram of Mecca using FRP, the strengthening of the Grand Mosque of Kuwait as well as a number of bridges using FRP namely ; Lebanon square bridge in Cairo Egypt, Rashid Prestressed concrete Bridge in Egypt and the two bridges at Lusail Qatar.

Her activities have significantly contributed to the successful completion of the preceding projects. She has always been very highly active enthusiastic and effective and demonstrated very high professional attitude in all of the works she has been involved with. I am glad that her affiliation with my office is continuing and her outstanding performance will always prove to be an asset to the works of my consulting firm.

Her outstanding performance has been demonstrated during my activities as the Egyptian representative in the ISO committee TC 71 as evident by our great achievement in getting the endorsement of ISO in granting the Egyptian code for the design and construction of concrete structure the international designation her contribution in this regard was very highly appreciated.

In year 2018 Dr Abdulsalam established her own business in Canada. The cooperation between my consulting office and Dr.. Abdulsalam is continuing through her newly established company; CIISolutions Composite Infrastructure Innovation Solutions Corporation. In this regard, my office and CIISolutions have been jointly involved in a number of projects and consulting activities. in Canada, the Middle East and India.







**CONSULTING ENGINEER PROF.  
Prof. DR. IBRAHIM MAHFOUZ**

**المهندس الاستشاري  
الأستاذ الدكتور / إبراهيم محفوظ**

**Sincerely**

*Ibrahim Mahfouz*

**Ibrahim Mahfouz PhD PEng Inventor  
Chair of the Egyptian Code Standing Committee for the Use of FRP in The construction Fields  
Vice Chair of the Egyptian Code Standing Committee for the Design and Construction of Concrete Structures  
Voting Member ACI Committee 440**

November, 24, 2018



**Building # (131)-EMTEDAD GHARB AL-GOLF-NEW CAIRO فيلا (131) – إمتداد غرب الجولف القاهرة الجديدة**

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**6 طريق صلاح سالم- مصر الجديدة**



To Whom It May Concern

This is Ahmad Abdulkader I am the CTO of Voicera a company located at Palo Alto, California, Voicera, whose AI assistant Eva creates transcripts from voice recordings of meetings, announced the closure of a \$14.5 million funding round, which includes backing from a few tech giants with plans to put their own assistants in the workplace. Formerly Workfit, Voicera uses natural language processing and speech recognition to make transcripts and spot task assignments or other noteworthy events in a meeting. My specialites include Design and develop click prediction models and algorithms for online advertisement. Develop Query Understanding/Reformulation algorithms for Microsoft's Bing search engine, Develop machine learning based Web Ranking algorithms for Microsoft's Bing search engine, Research and development of offline and online handwritten and printed text recognition engines. Developed OCR and Document Understanding Engines for Google's Book Search Developed Computer Vision engines for object detection and recognition for Google's Street View. Research, design and development of various machine learning based components used in search and information retrieval. I have several Patents and headed the AI activities in Google and Microsoft.

I am writing this letter to show my strong support for the startup founded by Dr Abdulsalam. Bahira was my former colleague at Faculty of Engineering Cairo University. We have graduated from the same class of 1990 and we have been involved in teaching computer sciences for the undergraduate engineers at Cairo University, Bahira was then successfully leading the activities of the computer club that we founded at the year 1983. I have been closely following up with her professional activities and was glad to witness closely her continuous academic progress. Recently I was glad to see the starting of her new business CIISolutions Composite Infrastructure Innovation Solutions Corp. A corporation that is providing innovative solutions for infrastructure rehabilitation concerned of the structural rehabilitation and extending the service lifes of structures.

As an Artificial Intelligence expert I am glad to be providing consulting services for CIISolutions on a new software that is currently under development which is focusing on the prediction of service life of structures using Artificial Neural Networks Approach. My role is to provide guidance and support to the effort that the company initiated towards the development of this system.

Please accept my best regards

Ahmad

A handwritten signature in black ink, appearing to read 'Ahmad', with a long horizontal line extending to the right.