

## **FARHANA H. ZULKERNINE, PhD, PEng**

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### **HIGHLIGHTS**

- **Teaching**
  - Taught all 4 COGS courses from 1<sup>st</sup> year to 4<sup>th</sup> year from 2014-2017 winter. Since 2017 Fall, teaching two undergrad COGS and grad neural network course (no teaching relief when joined).
  - Created all COGS courses from scratch in 2014 including the online COGS 100 course.
  - Updated the COGS program, changed required and optional courses, helped in defining courses for data analytics and AI streams and the Field of Study in AI.
  - Supervised 61 HQP (includes 34 undergraduates and 2 high school HQP who coauthored research publications), and served on the examination and supervisory committees of 32 HQP.
- **Research**
  - Secured more than CDN \$2,915,000 interdisciplinary joint research funding with a individual share of about CDN \$900,000 since 2017.
  - Founded the new BAM (Big data Analytics and Management) laboratory powered by leading edge high performance computing servers with CFI funding.
  - Published more than 60 peer reviewed journal and conference papers in reputed IEEE/ACM conferences and workshops on both core and multidisciplinary research.
  - Currently working with multiple industry partners, namely IBM, Gnowit, Calian, and KDS, and previously worked with SAP and CA Technologies.
  - Worked with government organizations (Public Health, Ministry of Health and Long Term Care).
- **Service**
  - Served on departmental committees (undergraduate, appointments, and renewal-tenure-promotion).
  - Coordinator of COGS Program since 2014.
  - Director, BAM Laboratory.
  - Faculty contact for the new AI stream.
  - Contributed to the design of the new AI grad and undergraduate programs offered by the School.
  - Served as a member of multiple conference program committees.
  - Currently serving as a member of scientific advisory committee of SOSCIP (Queen's big data representative) and CUTRIC.
  - Organized several workshops at conferences and at Queen's.
  - Served on 23 different conference/workshop technical program committees and reviewed papers from 19 different journals including many grant applications.
- **Other**
  - A licensed member of Professional Engineers of Ontario.
  - More than 15 years of research and development experience in industry and academia on 3 different continents.

## 1. RESEARCH INTERESTS

*Discipline:* Information Systems and Artificial Intelligence

*Areas of Research:*

- Big and Streaming Data Management and Analytics
- Artificial Intelligence, Deep Learning and Decision Support Systems (DSS)
- Cognitive Computing
- Knowledge Management Systems
- Cloud and Services Computing

*Fields of Application:* Data is generated from digital systems in all disciplines which we process and manage using big and streaming data analytics systems and AI algorithms for creating DSS

- Medical/Health, Biology, Smart Cities, Autonomous Vehicles, Engineering, Environment, Internet of Things (devices connected via internet), Law, and Business

## 2. EDUCATION

- **Doctor of Philosophy, 2009**

School of Computing, Queen's University, Kingston, ON, Canada

Thesis: *A Comprehensive Service Management Middleware for Autonomic Management of Composite Web Services-based Processes*

- **Master of Science (Eng.), 1997**

Computer Science and Engineering

Bangladesh University of Engineering and Technology, Dhaka, Bangladesh

Thesis: *Computer Aided Testing and Tutoring System Using Multiple Choice Questions*

- **Bachelor of Science (Egg.), 1993**

Computer Science and Engineering

Bangladesh University of Engineering and Technology, Dhaka, Bangladesh

Thesis: *Computerization of the Registration, Examination and Tabulation System of a University*

## 3. EMPLOYMENT HISTORY

Position	Duration	Responsibilities
<ul style="list-style-type: none"> <li>• <b>Assistant Professor and Coordinator, Cognitive Science Program</b> Director, BAM Laboratory School of Computing, Queen's University, Kingston, ON, Canada</li> </ul>	2017-2020	Conduct research and supervise HQP, teach, and perform administrative tasks (coordinator of cognitive science program, member of undergraduate, tenure-promotion, appointment committee)
<ul style="list-style-type: none"> <li>• <b>Teaching Adjunct Assistant Professor and Coordinator, Cognitive Science Program</b> School of Computing, Queen's University, Kingston, ON, Canada</li> </ul>	2014 – 2016	Supervise graduate research, review and design four core cognitive science courses, serve as the primary contact person for the program, teach all cognitive science courses, and supervise and coordinate undergraduate research projects.
<ul style="list-style-type: none"> <li>• <b>Research Adjunct Assistant Professor</b> School of Computing, Queen's University, Kingston, ON, Canada</li> </ul>	2011-2016	Co-supervise graduate generally funded by professors with research funding, supervise undergraduate student project work.
<ul style="list-style-type: none"> <li>• <b>Research Scientist &amp; Postdoctoral Fellow</b> Research and Development Centre, IBM Canada</li> </ul>	2012 – 2014	Lead and manage Cloud-based Analytics-as-a-Service (AaaS) project on big data analytics for medical data funded by the Southern Ontario Smart Computing Innovation Platform (SOSCIP) consortium and IBM.

<ul style="list-style-type: none"> <li>• <b>MITACS Elevate Industrial Postdoctoral Fellow</b> CA Technologies and Database Laboratory, School of Computing, Queen's University, Kingston, ON, Canada</li> </ul>	2010 – 2012	Lead and manage Decision Support for Database Administrators using Warehouse-as-a-service (DSDAware) project in collaboration with CA Technologies to identify Mainframe 2.0 DB2 problems from log data and provenance data on problem solving steps to provide decision support to the DBAs.
<ul style="list-style-type: none"> <li>• <b>Research Scientist</b> Service Oriented Applications Center for Information Technology Institute, Fondazione Bruno Kessler (FBK), Trento, Italy</li> </ul>	2009 – 2010	Work on SLA@SOI European Union project and collaborate with SAP Germany in a project on modeling and verification of service-based business processes, and supervise graduate students.
<ul style="list-style-type: none"> <li>• <b>Research Associate</b> School of Computing, Queen's University, Kingston, ON, Canada</li> </ul>	2006 - 2009	Research on autonomic Web services management, and supervise an undergraduate student project.
<ul style="list-style-type: none"> <li>• <b>Senior Software Developer-Analyst and Team Lead</b> Spicer Corporation (now OpenText), Kitchener, ON, Canada</li> </ul>	1998 - 2003	Re-engineer, develop and maintain integrated document management software systems and customized systems for clients like CN Rail, FileNET and Ontario Hydro.
<ul style="list-style-type: none"> <li>• <b>Systems Analyst</b> UNICEF (United Nations Children's Fund), Dhaka, Bangladesh</li> </ul>	1995 – 1997	Design and develop data analytics tools and software systems.
<ul style="list-style-type: none"> <li>• <b>Assistant Programmer</b> Excise, Taxes &amp; Customs Data Computerization Project (sponsored by World Bank), National Board of Revenue (NBR), Dhaka, Bangladesh</li> </ul>	1993 – 1995	Generate Taxpayer's Identification Number (TIN) for the government of Bangladesh.

## TEACHING

### 4. TEACHING AND COURSE / PROGRAM DESIGN ACTIVITIES

<b>Courses Taught</b>	<b>Size</b>	<b>Level</b>	<b>Year</b>
1 Introduction to Cognitive Science: COGS100	150~200	UG*	2014-2018
2 Cognition and Computation: COGS201	25	UG	2014-2017
3 Programming Cognitive Models: COGS300	15	UG	2014-2017
4 Neural and Genetic Computing: COGS400/CISC/CMPE452	130	UG	2014-2019
5 Neural Networks: CISC874	15	Grad	2017-2019
6 Advanced Research Project COGS/CISC499	6-8	UG	2014-2017
7 Advanced Database Management System CISC432/832	35	UG/Grad	2011
<b>Courses Redesigned</b>		<b>Level</b>	<b>Year</b>
1 Introduction to Cognitive Science: COGS100		UG	2014
2 Cognition and Computation: COGS201		UG	2014
3 Programming Cognitive Models: COGS300		UG	2014
4 Neural and Genetic Computing: COGS400/CISC/CMPE452		UG	2014
5 Neural Networks: CISC 874		Grad	2017
6 Online version of Introduction to Cognitive Science: COGS100		UG	2016-2017
7 Advanced Research Project COGS/CISC499		UG	2014-2017
<b>Created New Courses</b>		<b>Level</b>	<b>Year</b>
1 Reinforcement Learning: CISC 856 (for the new Field of Study in AI)		Grad	2014-2018

2	Fundamentals of Artificial Intelligence and Machine Learning : CSAI-801/3.0 (for MSc certificate in AI)	Grad	2018
3	Artificial Intelligence and Machine Learning Applications: CSAI-802/3.0 (for MSc certificate in AI)	Grad	2018
4	Online version of Introduction to Cognitive Science: COGS100	UG	2016
<b>Program Design/ Redesign</b>		<b>Level</b>	<b>Year</b>
1	Designed new stream in AI (with committee members)	Grad	2014-2018
2	Redesigned COGS program (add/replace/modify courses)	Grad	2018

\*UG – Undergraduate

## 5. HQP SUPERVISION

In addition to graduate students and postdocs, I supervise both half year and full year undergraduate capstone research projects of undergraduate students, and many of these research results are published papers in reputed IEEE conferences and workshops. I also supervise summer high school students, one of whom published a paper this year. Three Mitacs Globalink funded international summer interns and three other students from Engineering Physics and Queen's ECE department also did their undergraduate and graduate projects with me.

	Current Students		Past Students		Total
	Supervised	Co-supervised	Supervised	Co-supervised	
<b>Postdoctoral Fellow</b>	1	1			2
<b>PhD</b>	2	1		2	5
<b>MSc</b>	6	2	8	4	20
<b>Undergraduate</b>			26	8	34
<b>Other</b>			3		3
<b>Total</b>	<b>14</b>	<b>10</b>	<b>29</b>	<b>8</b>	<b>64</b>

## 6. HQP SUPERVISION ACTIVITIES

Name	Yrs	Type	Thesis/Project Title	Current Position
<b>Postdoctoral Fellows</b>				
1 Hasan Zafari (co-supervised)	2018-	Post-doc	Unstructured text data mining to diagnose PTSD	In Progress
2 Haruna Isah	2017-	Post-doc	A multilevel streaming data analytics infrastructure for predictive analytics	In Progress
<b>Graduate Students</b>				
3 Prithila Angkan	2020-2020	MEng	Human activity recognition using skeletal data	In Progress
4 Zunayed Mahmud	2020-2020	MEng	Video object tracking for autonomous vehicles	In Progress
5 Junaid Charania	2020-2020	MEng	Hierarchical clustering of sensor IOT data	In Progress
6 Karen Batch (co-supervised)	2019-	MSc	Deep learning for medical image and text analytics	To start from Fall
7 Donghao Qiao	2019-	MSc	Attention based deep learning for streaming text analytics	To start from Fall
8 Isaac Hogan (co-supervised)	2019-	MSc	Attention enabled object recognition	RA, to start from Fall
9 Yuhao Chen	2019-	MSc	A cognitive interactive chat bot	RA, to start from Fall

10	Mirza Hafiz	2019-	MSc	A multilevel natural language query platform	RA, to start from Fall
11	Priyanka Trivedi	2018-	PhD	Pattern mining for storage management of massive IoT data	In Progress
12	Mohammad Gasmallah (co-supervised)	2018-	MSc	Video object detection with face recognition	In Progress
13	Jason Lam	2018-	MSc	Knowledge mining from unstructured medical text data	In Progress
14	Sazia Mahfuz	2017-	PhD	A smart data profiling framework	In Progress
15	Ftoon Kedwan	2017-	PhD	A hybrid knowledge management framework	In Progress
16	Niventhini Indrajith	2017 2018	MSc	Text mining for disease diagnostic	Empire Life Insurance, Kingston
17	Chanderdhar Sharma	2017 2018	MSc	Unstructured text mining and topic modeling	Machine Learning Engineer, Scotiabank, Canada
18	Mandeep Kandhari	2018S 2018	MEng	An intelligent human-machine voice interaction systems	Completed
19	Dharmitha Ajerla	2017 2018	MSc	An edge computing framework for fall detection using wearable sensor devices	R & D software developer, mentor graphics, Saskatoon
20	Dev Shah	2017 2018	MSc	Stock market prediction	Software Developer, Myplanet, Toronto
21	Kireet Bhat	2016S 2017	MSc	Data profiling	Data Analyst, TD Bank, Toronto, ON, Canada
22	Tariq Abughofa	2016 2018	MSc	Dynamic graph processing with streaming data	Data Engineer, Upgrade Inc.
23	Tarek Ahmed (co-supervised)	2016 2016	PhD	Proactive auto-scaling of resources for steam processing engines in the cloud	Withdrawn – Agfa HealthCare, Software Developer, Kitchener
24	Hadeel Alghamdi (co-supervised)	2015 2017	MSc	Distributed DBMS in WINGS workflow management system	Saudi Students Assoc., Kingston, ON
25	Azadeh Eftekhari (co-supervised)	2013 2016	MSc	BINARY: A framework for big data integration for ad-hoc querying	Completed
26	Mastoureh Hassannezhad (co-supervised)	2012 2014	MSc	Managing long-running queries using query progress indicator	Software Developer, IBM Canada, Ontario, Canada
27	Rizwan Mian (co-supervised)	2011 2013	PhD	Smart spending: Determining cost-effective resource configurations for executing data-intensive workloads in public clouds	Big Data Specialist, Bell Canada
<b>Undergraduate Students</b>					
28	Zili Lou	2019- 2020	CISC 499	Email text categorization for automatic response generation	Completed
29	Chuyan Zheng	2019- 2020	CISC 499	Face recognition and text chatting for a student support system	Completed
30	Brendan Kolisnik	2019- 2020	CISC 499	Hierarchical image classification for online clothing sale	Completed

31	Ethan Peters	2019-2020	CISC 499	Food item classification using deep learning in computer vision	Completed
32	Lixian Su	2019-2020	CISC 499	Traffic sign detection using video data with deep learning in computer vision	Completed
33	Zhaoyu Yin	2019-2020	CISC 499	Driver fatigue detection using facial video data	Completed
34	Martin Woo	2019-2020	CISC 499	Hierarchical clustering of IOT sensor data for human activity recognition	Completed
35	Sara Langlois	2019-2020	CISC 499	Using machine learning for predictive diagnosis of COPD	Intern at LocateMotion
36	Ryan Kishenbaum	2019-2020	CISC 499	Sequential pattern mining for disease progression analysis of PTSD patients	Completed
37	Liam Tharp	2019-2020	Engg-Physics	KFL&A Real Time Hospital Surge Prediction	Completed
38	Yifei Yin	2019-2020	CISC 500	Non-pecuniary damages compensation estimator	Completed
39	Yu Liu	2019	Mitacs Global-link	Deep learning for real time pattern extraction and recognition	Completed
40	Harsh Patel	2019	Mitacs Global-link	Deep learning for video activity recognition	Completed
41	Isaac Hogan	2018-2019	COGS 499	A deep learning model for image super-resolution	Summer intern & new grad student, BAMLab
42	Alex Wojaczek	2018-2019	COGS 499	A deep learning model for molecular cell boundary recognition	Software Engineer, Google, California, USA
43	Ruoran Liu	2018-2019	CISC 499	A data lake for efficient hybrid data ingestion and query processing	N/A
44	Grace Ge	2018-2019	CISC 499	An end-to-end streaming text data ingestion and processing pipeline for sentiment analysis	Summer intern & new grad student, BAMLab
45	Mitchel Skarupa	2018-2019	CISC 499	A sensor based tracker system for monitoring Alzheimer's patients	N/A
46	Chantal Montgomery	2018-2019	CISC 499	A natural language query platform for a database management system	Software Engineering Intern, Mark43, Toronto
47	Yuhao Chen	2018-2019	CISC 499	An intelligent interactive system with face recognition capabilities	Summer intern & new grad student, BAMLab
48	Kennedy Raltson	2018-2019	COGS 499	A multilingual compassionate chatbot based on IBM Watson	N/A
49	Hongkai Chen	2018	CISC 500	Mining patterns from streaming IoT data	MSc student, UofT
50	Marwa Chermiti	2018	Mitacs Global-link	Data mining and deep learning models for analyzing unstructured medical text data	Associative Activity chez Enactus, Tunisia
51	Lucas Rychlo	2017-2018	COGS 499	Lab reporting to public health Ontario: A cognitive computing approach	Data Scientist, Public Health Ontario, Toronto

52	Brayden Dewar	2017 2018	CISC 499	Data cleaning and correction using machine learning techniques	Junior Developer, OrthoEvidence Inc., Canada
53	Alex Weatherhead (co-supervised)	2017 2018	CISC 499	Designing autonomous vehicles using optical object recognition	Graduate Student, University of Waterloo
54	Daisy Barrette (co-supervised)	2017 2018	CISC 499	Training autonomous vehicles using machine learning approach with sensor data	Marketing Manager, Studio Labs, Canada
55	Michael Petkov	2017 2018	CISC 499	Image object recognition using enhanced resolution	N/A
56	Mohammed Gasmallah	2018 2018	CISC 499	Video object recognition using deep learning models	Graduate Student, Queen's University
57	Paul Briggs	2017 2018	Engg. Phys	Using machine learning to predict enemy attacks in computer games	Graduate Student, University of Toronto
58	Michael Judd	2017 2018	CISC 499	Medical text data analytics using NLP and text mining techniques for classification of lower back pain	Software Developer, Full Stack Developer, Coinsquare, Toronto, Canada
59	Matthew Sherar	2016 2017	CISC 500	Implementing PSO for big data clustering on Apache Spark	Data Analyst, Royal Bank of Canada, Toronto, Ontario, Canada
60	Tiffany Leung	2016 2017	COGS 499	Use of virtual reality in education: A cognitive approach	Business Technology Analyst, Deloitte
61	Alexandra Poole	2016 2017	COGS 499	Detecting dyslexia through auditory processing	Graduate Student, University of Toronto
62	Alexander Lansky	2016 2017	COGS 499	Blockchain in decentralized consensus-based architectures for multi-agent systems	Consultant PrivacyShell Corp, Ontario, Canada
63	Jonathan Creighton	2016 2017	CISC 499	Towards building a hybrid model for predicting stock indexes	N/A
64	Hugo Goncalves	2016 S	ECE.	An ANN model for categorization and selection of music	N/A
65	Daniel Lafreniere	2015 2016	COGS 499	Medical data analytics for disease prediction	Frontend Developer, Advisor Websites
66	Arwin Chan	2015 2016	COGS 499	Creating design forms using evolutionary computing	Graduate Student, McMaster University
67	Travis Rhee	2015 2016	COGS 499	A neural network model for movie and social data analytics	Video Producer & Data Analytics Specialist, Acquire Agency
68	Conor Fitzpatrick	2014 2015	COGS 499	Visual perception and attention for game development	Customer/Product Support Analyst, Infoware Group, Toronto, Ontario, Canada
69	Sam Yeon	2014 2015	COGS 499	Application of metal imagery in rehabilitation program	N/A
70	Catherine Aylward	2014 2015	COGS 499	Study of cognitive models for dyslexia	Student Marketing and Communications Assistant, Algonquin

College of Applied Arts and Technology					
71	Mark Simon (co-supervised)	2012 2012	CISC 499	Parallel execution of CAPRI line pattern mining tool on a multi-cluster environment on Amazon cloud	N/A
<b>High School Summer Interns</b>					
72	Kendra Denhart	2016S	HS	Development of a website for getting user feedback for automatically generated drawings	
73	Morgan Gallant	2018S	HS	Development of a website for collaborative research work	
74	Morgan Gallant	2017S	HS	Evaluating cloud enabled smart voice interaction systems	

**RESEARCH****7. RESEARCH FUNDING HISTORY – GRANTS AND AWARDS**

Currently Held (CDN): \$3,058,500 Individual share (CDN): About \$1,150,500 (cash)

Role	Source	Amount	Term	Type	Title and Collaborators
<b>Currently Held</b>					
<b>PI</b>	NSERC CRD	\$194,000	2019-2022	G	Learning distributed patterns from multimodal streaming data
<b>PI</b>	Mitacs Cluster (CUTRIC)	\$43,998	2019-2020	G	Deep Learning for Data Transfer and AI in Smart Vehicles
<b>PI</b>	Mitacs Cluster with KDS	\$79,998	2019-2021	G	Distributing Computing and Machine Learning Applications
<b>Collaborator</b>	New Frontiers in Research Fund	\$200,000	2019-2020	G	Develop a cloud-based online negotiation platform for legal settlements (with Conflicts Analytics Lab, Queen's Law and School of Business)
<b>Co-PI (12%)</b>	NSERC CREATE	\$1,650,000 commitment \$986,000	2018-2023	G	Cybersecurity Training for Defending Canada's Government, Critical Infrastructure, Businesses and Citizens
<b>PI (100%)</b>	CUTRIC	\$36,000	2019-2020	G <sup>1</sup>	Deep Learning for Data Transfer and AI in Smart Vehicles
<b>Co-PI (33.5%)</b>	CIMVHR, IBM, Mitacs	\$388,000 Share: \$130,000	2018-2020	G	Using Advanced Analytics to Understand PTSD (Calian, IBM, U of Manitoba, Western U & others)
<b>PI (100%)</b>	CFI ORF	\$80,000	2018-2023	G	A Smart Big Data Analytics and Knowledge Management Framework
<b>PI (100%)</b>	CFI JELF	\$80,000	2018-2023	G	A Smart Cloud-based Big Data Analytics and Knowledge Management Framework
<b>PI (100%)</b>	CFI IOF	\$12,000	2019-2023	G	A Smart Big Data Analytics and Knowledge Management Framework (infrastructure operating)
<b>PI (100%)</b>	IBM CAS	\$102,000	2018-2021	G	Intelligent Data Profiling for Managing Massive Streaming Data

<sup>1</sup> G: Grant, A: Award



		In-kind: \$121,800			
<b>PI</b> (100%)	NSERC DG Launch Supplement	\$12,500	2019-2023	G	A Smart Big Data Analytics and Knowledge Management Framework
<b>PI</b> (100%)	NSERC Discovery	\$140,000	2018-2023	G	A Smart Big Data Analytics and Knowledge Management Framework
<b>PI</b> (100%)	Queen's RIG	\$40,000	2017-2022	G	Management and Analytics of Big Data
<b>PI</b> (100%)	CC RPP	Resource for web hosting	2015-2020	G	Disease Analytics Service on the Cloud (DiSC), Intelligent Disease-Symptom Analyzer (IDeA)
<b>PI</b> (100%)	CPCSSN	Data	2015-2020	G	DiSC and IDeA
<b>Applied for</b>					
<b>PI</b>	Queen's COVID-19	\$50,000	2020-2020	G	A Data Ingestion, Early Diagnosis and Risk Prediction Framework for COVID-19
<b>Awarded (past)</b>					
<b>PI</b> (100%)	QROF	\$25,000	2019-2020	G	Enhancing Computer Vision to Better Recognize and Track Moving Objects
<b>PI</b> (100%)	OCE VIP I	\$20,000	2018-2019	G	Developing an Apache Spark Adapter for IBM Streams
<b>PI</b> (100%)	SOSCIP	\$130,000	2017-2019	G	A Multilevel Streaming Data Analytics Infrastructure for Predictive Analytics (Gnowit & IBM)
<b>PI</b>	Mitacs Globalink	\$6,000	2019-2019	G	Research and develop deep learning models for activity recognition using video data
<b>PI</b>	Mitacs Globalink	\$6,000	2019-2019	G	Research and develop deep learning models for extracting patterns from streaming IoT data
<b>PI</b>	Mitacs Globalink	\$6,000	2018-2018	G	Research and Develop Artificial Neural Network Models for Predictive and Prescriptive Analytics in the Medical Data Domain
<b>PI</b>	Queen's	\$12,500	2014-2016	G	Queen's University Faculty Association Award for scholarly research and professional development
<b>PI</b>	Mitacs Elevate	\$70,000	2010-2012	A	Decision Support for Database Administrators using Warehouse-as-a-service (DSDAware) (CA Technologies)
	SOSCIP PDF	\$65,000	2012-2014	A	Analytics-as-a-Service (IBM)
<b>PI</b>	NSERC PDF	\$40,000	2012	A	(Declined) <sup>2</sup> Provisioning Knowledge Services in the Cloud
<b>PI</b>	NSERC IRDF		2012	A	(Declined) Provisioning Customizable Knowledge Services in the Cloud
<b>PI</b>	NSERC VF		2010	A	(Declined) <sup>2</sup> Web Service-based Architecture for Knowledge Acquisition, Analysis and Dissemination
<b>PI</b>	SELHIN	Data	2012-2014	G	Analytics-as-a-Service (IBM)

CIMVHR: Canadian Institute for Military and Veteran Health Research

SOSCIP: Southern Ontario Smart Computing Innovation Platform

SELHIN: South East Local Health Integration Network

[1] <sup>2</sup> I declined in order to accept IBM/SOSCIP award

CUTRIC: Canadian Urban Transit Research and Innovation Consortium  
 CPCSSN: Canadian Primary Care Sentinel Services Network  
 CC RPP: Compute Canada Research Platform and Portal, CAC: Centre for Advanced Computing  
 NSERC: Natural Science and Engineering Research Council, OCE: Ontario Centres of Excellence  
 IBM CAS: IBM Centre for Advanced Studies  
 CFI: Canada Foundation for Innovation, ORF: Ontario Research Fund

## 8. RESEARCH PUBLICATIONS

For a past paced area such as computer science, IEEE and ACM conference publications are of great value and most of our work is published in reputed IEEE, ACM big data, computational intelligence, and AI conferences with the HQP as the first author. In the list of publications, HQP names are preceded by \*, academic colleagues are denoted by \*\*, and industry partners are indicated by ~. A summary of my publications is given below followed by the list of publications. The co-authors are listed in the order of contributions. However, in the case of students, they are listed as first authors to encourage them to publish more.

Type	Count
Peer reviewed journal articles	11
Peer reviewed conference/workshop papers	46
Peer reviewed posters/abstracts	11
Peer reviewed book chapters	3
Book	1
Posters	32
Published software tools / demo	6
Total	110

### • Peer-reviewed Journal Publications

- [1] \*Zafari, H., Kosowan, L., Zulkernine F., \*\*Singer, A., 2020 (submitted), “Diagnosing PTSD using structured and unstructured EMR Data”, Jamia.
- [2] \*Abughofa, T., Zulkernine, F., \*Isah, H., 2020 (submitted). "Incremental Community Detection in Distributed Dynamic Graphs". *Journal of Graph Algorithms and Applications*.
- [3] Kalaydina, RV, Zhou, H., Markvicheva, E., Burov, S., Zulkernine, F., \*\*Szewczuk, M., 2020, “Impact of fucosylation on self-assembly of 3D multicellular prostate and breast tumor spheroids by using cyclo-RGDfK(TPP) peptide and image object detection”, *OncoTargets and Therapy*.
- [4] \*Isah H., \*Abughofa, T., \*Mahfuz, S., \*Ajerla, D., and Zulkernine F., 2019. “Processing Real Time Data Streams: A Survey of Streaming Data Processing Engines”, *IEEE Access*.
- [5] \*\*Ajerla, D., \*Mahfuz, S., Zulkernine, F., 2019. "A Real-time Patient Monitoring Framework for Fall Detection". *Wireless Communications and Mobile Computing, special issue on Mobile Technologies and Sensor Networks in Healthcare Environments (MSHE)* available online at <https://doi.org/10.1155/2019/9507938>, Hindawi.
- [6] \*Shah, D., \*Isah, H., Zulkernine, F., 2019. "Stock Market Analysis: A Review and Taxonomy of Prediction Techniques". *MDPI International Journal of Financial Studies*, MDPI.
- [7] \*Leung, T., Zulkernine, F., \*Isah, H., 2019. “The Use of Virtual Reality in Enhancing Interdisciplinary Research and Education”, *Journal of Systemics, Cybernetics and Informatics*, vol. 16(6), pp. 4-9, pp. 1690-4524, (Online) <http://www.iiisci.org/journal/sci/issue.asp?is=ISS1806>
- [8] \*Mian, R., \*\*Martin, P., Zulkernine, F., and \*\*Vazquez-Poletti, J.L., 2014. “Cost-Effective Resource Configurations for Multitenant Database Systems in Public Clouds”, *International Journal of Cloud Applications and Computing (IJCAC)*, vol. 5(2), pp 1-22, IGI Global.
- [9] Zulkernine, F., and Martin, P., 2010. “An Adaptive and Intelligent SLA Negotiation System for Web Services”, *IEEE Transactions on Services Computing* (impact factor 1.985), vol. 4(1), pp. 31-43.

- [10] \*\*Brohman, M.K., Piccoli, G., Martin, P., Zulkernine, F., Parasuraman, A., and Watson, R., 2009. "A Design Theory Approach to Building Strategic Net-based Customer Service Systems", *Decision Sciences Journal* (impact factor 2.38), Special Topic Forum: "Advancing Decision Making in Service Innovation", vol. 40(3), pp. 403-430, Decision Sciences Institute.
- [11] Zulkernine, F., \*\*Powley, W., Tian, W., Martin, P., Xu, T., and Zebedee, J., 2008. "An Autonomic Web Services Environment using a Reflective and Database-Oriented Approach", *Ubiquitous Computing and Communication Journal*, Special Issue on Autonomic Computing Systems and Applications, pp.1-12.
- **Peer-reviewed Conference / Workshop Publications**
- [12] \*Gasmallah, M., \*\*Rivest F., Zulkernine F., 2020 (submitted), "Quantifying Path Smoothness in Video Object Tracking", International Conference on Computer Vision and Pattern Recognition (ECCV), Glasgow, UK.
- [13] \*Trivedi, P., Zulkernine, F., 2020 (submitted). "Componentry Analysis of Intelligent Transportation Systems in Smart Cities towards a Connected Future", International conference of IBM Centre for Advanced Studies (CAS), Toronto, Canada.
- [14] \*Shi, Y., \*Mahfuz, S., Zulkernine, F., ~Nicolls, P., 2020 (submitted). "An Adapter for IBM Streams and Apache Spark to Facilitate Multi-level Data Analytics", International conference of IBM Centre for Advanced Studies (CAS), Toronto, Canada.
- [15] \*Qiao, D., Zulkernine, F., 2020 (submitted). "Computer Vision for Vehicle Detection", *IEEE International Conference on Pervasive and Intelligent Computation (PICom)*, Calgary, Canada.
- [16] \*Qiao, D., Zulkernine, F., 2020 (submitted). "Dilated Squeeze-and-Excitation U-Net for Fetal Ultrasound Image Segmentation", *IEEE International Conference on Computational Intelligence in Bioinformatics and Computational Biology (CIBCB)*, Virtual Conference.
- [17] \*Zafari, H., \*Langlois, S., Zulkernine, F., \*\*Kosowan, L., \*\*Singer, A., 2020 (submitted). "Predicting Chronic Obstructive Pulmonary Disease from EMR data", *IEEE International Conference on Computational Intelligence in Bioinformatics and Computational Biology (CIBCB)*, Virtual Conference.
- [18] \*Liu, R., \*Isah, H., Zulkernine, F., 2020 (submitted). "A big data lake for multilevel streaming data analytics", *International Conference on Big Data Analytics and Practices (IBDAP)*.
- [19] \*Montgomery, C., \*Isah, H., Zulkernine, F. (submitted). "Towards a natural language query processing system", *International Conference on Big Data Analytics and Practices (IBDAP)*.
- [20] Nam, D., Yasmin, J., Zulkernine, F., 2020 (accepted). "Effects of Pre-trained Word Embeddings on Text-based Deception Detection", *IEEE International Conference on Pervasive and Intelligent Computation (PICom)*, Calgary, Canada.
- [21] \*Yin, Y., Zulkernine, F., \*\*Dahan, S., 2020 (accepted). "Determining Worker Type from Legal Text Data using Machine Learning", *IEEE International Conference on Pervasive and Intelligent Computation (PICom)*, Calgary, Canada.
- [22] Kandeel, A., Rahmanian, M., Zulkernine, F., \*\*Abbas, H., and \*\*Hassanein, H., 2020. "Facial expression recognition using a simplified convolutional neural network model," in International Conference on Communications, Signal Processing, and their Applications (ICCSPA'20), Sharjah, United Arab Emirates.
- [23] \*Batch, K., Lupton, K., Sun, S., Gangai, N., Cho, J., Gazit, L., \*\*Nguyen, H., Zulkernine, F., \*\*Do, R., \*\*Simpson, A., 2020. Using natural language processing to predict splenomegaly from >100,000 structured radiology reports. Poster session presented at: IMNO 2020. Proceedings of the 18th annual IMNO Symposium presented by Imaging Network Ontario (ImNO); Toronto, Ontario, Canada.
- [24] \*Chen, H., \*Mahfuz, S., Zulkernine, F., 2019. "Smart Phone Based Human Activity Recognition". *Proc. of the IEEE International Conference on Bioinformatics and Biomedicine*, San Diego, CA, USA.
- [25] \*Raltson, K., \*Chen, Y., \*Isah, H., Zulkernine, F., 2019. "A Voice Interactive Multilingual Student

- Support System using IBM Watson”, *Proc. of the IEEE International Conference of Machine Learning Applications (ICMLA) special session on machine learning in education*, Florida, USA.
- [26] \*Wojaczek, A., Kalaydina, R.V., \*Gasmallah, M., Zulkernine, F., \*\*Szewczuk, M., 2019. “Computer Vision for Prostate Cancer Spheroids Detection”. In proc. of *IEEE Symposium Series of Computational Intelligence (SSCI)*, Xiamen, China.
- [27] Kaczmarek, E., Salgo, A., \*Zafari, H., Kosowan, L., \*\*Singer, A., Zulkernine, F., 2019. “Diagnosing PTSD Using Electronic Medical Records from Canadian Primary Care Data”, In proc. of *IEEE Conf. on Networking, Systems and Security (NSysS)*, Dhaka, Bangladesh.
- [28] \*Ge, S., \*Isah, H., Zulkernine, F., ~Khan, S., 2019. “A Scalable Framework for Multilevel Streaming Data Analytics using Deep Learning”, *IEEE COMPSAC workshop DADA*, Milwaukee, USA.
- [29] \*Gallant, M., \*Isah, H., Zulkernine, F., ~Khan, S., 2019. “Xu: An Automated Query Expansion and Optimization Tool”, *IEEE COMPSAC: Data Driven Intelligence for a Smarter World*, Milwaukee, USA.
- [30] \*Gasmallah, M., Zulkernine, F., \*\*Rivest, F., \*\*Mousavi, P., Sedghi, A., 2019. “Fully End-To-End Super-Resolved Bone Age Estimation”, *Can-AI*, Kingston, ON, Canada.
- [31] \*Isah, H., Zulkernine, F., 2018. “A scalable and robust framework for data stream ingestion”, *IEEE International Conference on Big Data*, Seattle, USA, IEEE.
- [32] \*Shah, D., \*Isah, H., Zulkernine, F., 2018. “Predicting the Effects of News Sentiments on the Stock Market”, *IEEE Intl. Conf. on Big Data workshop on Big Data for Financial News and Data*, Seattle, USA, IEEE.
- [33] \*Shah, D., Campbell, W., Zulkernine, F., 2018. "A Comparative Study of LSTM and DNN for Stock Market Forecasting", *IEEE Intl. Conf. on Big Data workshop on Big Data for Financial News and Data*, Seattle, USA, IEEE.
- [34] \*Bhat, K., \*Lam, J., Zulkernine, F., 2018. "Content-based File Type Identification Using Machine Learning and Spark In-memory Data Analytics Framework", *International conference on Electrical and Computer Engineering*, Dhaka, Bangladesh.
- [35] \*Mahfuz, S., \*Isah, H., Zulkernine, F., ~Nicholls, P., 2018. “Detecting Irregular Patterns in IOT Streaming Data for Fall Detection”, *IEEE Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON)*, British Columbia, Canada, IEEE.
- [36] \*Kandhari, M., \*Isah, H., Zulkernine, F., 2018. “A voice operated e-commerce application using IBM Watson speech recognition tools”, *IEEE Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON)*, British Columbia, Canada, IEEE.
- [37] \*Gasmallah, M., Zulkernine, F., 2018. “Predictive Video Object Detector”, *IEEE Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON)*, British Columbia, Canada, IEEE.
- [38] \*Abughofa T., Zulkernine F., 2018, “Sprouter: Dynamic Graph Processing over Data Streams at Scale”, *Intl. Conf. on Database and Expert Systems Applications*, Regensburg, Germany.
- [39] \*Judd, M., Zulkernine, F., \*\*Wolfram, B., Rajaram, A., \*\*Barber, D., 2018. “Detecting Low Back Pain Using Text Processing and Machine Learning Approaches”, *Intl. Workshop on Biological Knowledge Discovery from Data (BIOKDD) at the Intl. Conf. on Database and Expert Systems Applications (DEXA)*, Regensburg, Germany.
- [40] \*\*Ajerla, D., \*Mahfuz, S., Zulkernine, F., 2018. “Fall Detection from Physical Activity Monitoring Data”, *Intl. SIGKDD workshop on Big Data, Streams and Heterogeneous Source Mining: Algorithms, Systems, Programming Models and Applications (BigMine) at Intl. Conf. on Knowledge Discovery and Data Mining (KDD)*, London, UK, ACM.
- [41] \*Leung, T., Zulkernine, F., \*Isah H., 2018. “The use of Virtual Reality in Enhancing Interdisciplinary Research and Education.”, *International Multi-Conference on Society, Cybernetics and Informatics: IMSCI*, Orlando, Florida.

- [42] \*Alghamdi, H., Zulkernine, F., \*\*Martin, P., 2017. “Leveraging Distributed Big Data Storage Support in CLAAaaS for WINGS Workflow Management System”, *Proc. of IEEE International Conference on Big Data (IEEE BigData) Workshop on Scalable Cloud Data Management (SCDM)*, Boston, USA.
- [43] \*Abughofa, T., Zulkernine, F., 2017. “Online Graph Processing with Spark Streaming”, *Proc. of the IEEE BigData Workshop on Benchmarking, Performance Tuning and Optimization for Big Data Applications*, Boston, USA.
- [44] \*Creighton, J., Zulkernine, F., 2017. “Towards Building a Hybrid Model for Predicting Stock Indexes”, *Proc. of IEEE BigData Workshop on Big Data for Economic and Business Forecasting*, Boston, USA.
- [45] \*Poole, A., Zulkernine, F., 8Aylward, C., 2017. “Lexa: A Tool for Detecting Dyslexia through Auditory Processing”, *Proc. of the IEEE Symposium on Computational Intelligence (SSCI) in Robotic Rehabilitation and Assistive Technologies (CIR2AT)*, Honolulu, Hawaii.
- [46] \*Sherar, M., Zulkernine, F., 2017. “Particle Swarm Optimization for Large-Scale Clustering on Apache Spark”, *Proc. of the IEEE Symposium on Computational Intelligence (SSCI) in Swarm Intelligence Symposium (SIS)*, Honolulu, Hawaii.
- [47] \*Eftekhari, A., Zulkernine, F., \*\*Martin, P., 2016. “BINARY: A Framework for Big Data Integration for Ad-hoc Querying”, *Proc. of the Workshop on Scalable Cloud Data Management IEEE International Conference on Big Data*, Washington DC, USA.
- [48] \*Lafreniere, D., Zulkernine, F., \*\*Barber, D., Martin, K., 2016. “Using Machine Learning to Predict Hypertension from Big Data”, *Proc. of the IEEE Symposium on Computational Intelligence (SSCI) in Healthcare and e-health (CICARE)*, Athens, Greece.
- [49] \*Rhee, T., Zulkernine, F., 2016. “Predicting Movie Box Office Profitability: A Neural Network Approach”, *Proc. of the workshop on Machine Learning Algorithms Systems and Applications at IEEE Intl. Conf. on Machine Learning and Applications (ICMLA)*, Anaheim, California, USA.
- [50] \*Chan, A., Zulkernine, F., 2016. “ArchiGen: A Conceptual Form Design Tool Using an Evolutionary Computing Approach”, *Proc. of the International Conference of the Center for Advanced Studies (CASCON)*, Toronto, Canada.
- [51] \*Ahmed, T., Zulkernine, F., \*\*Cordy, J., 2016. “Proactive Auto-scaling of Resources for Stream Processing Engines in the Cloud”, *Proc. of the International Conference of the IBM Center for Advanced Studies (CASCON)* (a paper and a poster), Toronto, Canada.
- [52] Martin, P.\*, Zulkernine, F., Khalifa, S., \*Eftekhari, A., ~Ashtiani, B., ~Rope, D., ~McRoberts, M., and ~Statchuck, C., 2013. “AaaS: Confluence of Big Data, Cloud Computing and SaaS”, *Proc. of the CASCON on Collaborative Research*, pp. 392-395 Toronto, Canada.
- [53] Zulkernine, F., Martin, P.\*, Powley, W., Soltani, S., ~Mankovski, S., and ~Addleman, M., 2013. “CAPRI: A Tool for Mining Complex Line Patterns in Large Log Data”, *Proc. of the ACM Knowledge Discovery and Data Mining (KDD) workshop on BigMine*, Chicago, IL, USA.
- [54] Zulkernine, F., \*\*Martin, P., \*\*Zou, Y., \*\*Bauer, M., \*\*Gwadry-Sridhar, F., \*\*Abounaga, A., 2013. “Towards Cloud-based Analytics-as-a-Service (CLAAaaS) for Big Data Analytics in the Cloud”, *Proc. of the IEEE Congress on Big Data*, pp. 62-69, Santa Clara, CA, USA.
- [55] \*Mian R., \*\*Martin, P., Zulkernine, F., and \*\*Vazquez-Poletti, J.L., 2013. “Towards building performance models for data-intensive workloads in public clouds”, *Proc. of the ACM/SPEC International Conf. on Performance Engineering (ICPE)*, pp. 259-270, ACM, New York, USA.
- [56] \*Mian, R., \*\*Martin, P., Zulkernine, F., \*\*Vazquez-Poletti, J.L., 2012. “Estimating Costs of Data-intensive Workload Execution in Public Clouds”, *Proc. of the International workshop on Middleware for Grids, Clouds and e-Science (MGC) in conjunction with ACM/IFIP/USENIX International Middleware Conference*, Montreal, Quebec, Canada.
- [57] Zulkernine, F., Martin, P., Soltani, S., Powley, W., ~Mankovski, S., and ~Addleman, M., 2012. “Towards a Training Oriented Adaptive Decision Support System”, *Proc. of the IEEE International*

- Conference on Data Engineering (ICDE) workshop on Data-Driven Decision Guidance and Support System (DGSS)*, pp. 111 – 120, Washington D.C. USA.
- [58] Zulkernine, F., Bertoli, P., Pistore, M., ~Friesen, A., ~Lemcke, J., ~Thimmel, B., and ~Von Geisau, O., 2012. “A Constraint-Driven Business Object Model for Service-Based Business Processes”, *Proc. of the International Conference on Information Technology: New Generations (ITNG), Information Systems and Internet Technology track*, pp: 182-188, Las Vegas, Nevada, USA.
- [59] Zulkernine, F., Martin, P., ~Craddock, C., and ~Wilson, K., 2008. “A Policy-based Middleware for Web Services SLA Negotiation”, *Proc. of the IEEE International Conference on Web Services (ICWS)* (18% acceptance rate), pp. 1043-1050, IEEE CS, Beijing, China.
- [60] Zulkernine, F., Martin, P., and ~Wilson, K., 2008. “A Middleware Solution to Monitoring Composite Web Services-based Processes”, *Proc. of the IEEE Congress on Services (SERVICES'08) Part II at the Workshop on Service Intelligence and Computing (SIC) of the IEEE International Conference on Web Services (ICWS)*, pp. 149-156, IEEE CS, Beijing, China.
- [61] Xu, Z., Martin, P., Powley, W., and Zulkernine, F., 2007. “Reputation-Enhanced QoS-based Web Services Discovery”, *Proc. of the IEEE International Conference on Web Services (ICWS'07)* (18% acceptance rate, 208 citations), pp. 249-256, Salt Lake City, Utah, USA.
- [62] Zulkernine, F., and Martin, P., 2007. “Conceptual Framework for a Comprehensive Service Management Middleware”, (**Best Paper Award**), *Proc. of the Intl. IEEE Workshop on Service Oriented Architectures in Converging Networked Environments (SOCNE) with IEEE Advanced Information on Networking & Applications(AINA)*, vol.1, pp.995-1000, Niagara Falls, Canada.
- [63] Tian, W., Zulkernine, F., Zebedee, J., Powley, W., and Martin, P., 2005. “Architecture for an Autonomic Web Services Environment”, *Proc. of the Joint Workshop on Web Services and Model-Driven Enterprise Information Systems (WSMDEIS) in conjunction with International Conference on Enterprise Information Systems (ICEIS)*, pp.32-44, Miami, Florida, USA.
- **Peer Reviewed Abstracts/Posters**
- [64] \*Lam, J., \*\*Dahan, S., Zulkernine, F., 2019. “Predicting Reasonable Notice Awards on Termination of Employment Using Deep Learning”, poster, in *proc. of the 29th annual international conference on Computer Science and Software Engineering hosted by IBM Corp. (CASCON 2019)*, Markham, Ontario, Canada.
- [65] \*Gasmallah, M., \*\*Rivest, F., Zulkernine, F., 2019. “Smoothing Paths using Temporal Video Object Detectors”, poster, in *proc. of the 29th annual international conference on Computer Science and Software Engineering hosted by IBM Corp. (CASCON 2019)*, Markham, Ontario, Canada.
- [66] \*Trivedi, P., Zulkernine, F., 2019. “AI for Enabling Efficient V2V and V2I Data Communication”, poster, in *proc. of the 29th annual international conference on Computer Science and Software Engineering hosted by IBM Corp. (CASCON 2019)*, Markham, Ontario, Canada.
- [67] \*Mahfuz, S., Zulkernine, F., ~Nicholls, P., 2019. "Data Profiling for Storage Optimization using IBM Streaming Analytics", poster, in *proc. of the 29th annual international conference on Computer Science and Software Engineering hosted by IBM Corp. (CASCON 2019)*, Markham, Ontario, Canada.
- [68] \*Lam, J., Zulkernine, F., \*\*Singer, A., Kosowan, L., 2019. “Identifying Patients with PTSD using Deep Learning”, poster, in *proc. of the 10th annual conference hosted by the Canadian Institute for Military and Veteran Health Research (CIMVHR)*, Ottawa-Gatineau, Canada.
- [69] \*Zafari, H., Zulkernine, F., \*\*Singer, A., Kosowan, L., 2019. “Weakly Supervised Text Classification for Assisting Patient Data Processing”, poster, in the *10th annual conference hosted by the Canadian Institute for Military and Veteran Health Research (CIMVHR)*, Ottawa-Gatineau, Canada.
- [70] Kalaydina, R., Zhou, H., \*Wojaczek, A., Zulkernine, F., \*Gasmallah, M., \*\*Szewczuk, M., 2019 (accepted). “Image Object Detection Facilitates the Study of Fucosylation in Multicellular Tumour Spheroids”, poster, in *proc. of IEEE International Conference on Computational Intelligence in Bioinformatics and Computational Biology*, Siena - Tuscany, Italy.

- [71] \*Mahfuz, S., Zulkernine, F., ~Nicholls, P., 2018. "Fall as an Irregular Pattern in IoT Streaming Data", poster presented in CASCON, the 28th Annual International Conference on Computer Science and Software Engineering, Toronto, Canada.
- [72] Rajaram, A., \*Judd, M., Zulkernine, F., \*\*Barber, D., and \*\*Wolfrom, B., 2018. "Development of a Generalized Text Mining Framework for Characterizing Low Back Pain in Primary Care: A Pilot Study", *Intl Conf. on Intelligent Biology and Medicine (ICIBM)*, CA, USA.
- [73] \*Sherar, M., \*Bhat, K., Zulkernine, F., 2017. "Implementation of a Particle Swarm Optimization Clustering Algorithm in Apache Spark for High Dimensional Data", *Proc. of High Performance Computing Symposium (HPCS)*, Queen's University.
- [74] \*Song, G., \*Vollebregt, M., Zulkernine, F., 2017. "Training Navigation to Virtual Autonomous Race Cars Using NeuroEvolution", *Proc. of High Performance Computing Symposium (HPCS)*, Queen's University.

- **Refereed Book Chapters**

- [75] \*Lam, J., Kosowan L., \*Zafari H., Peeler W., \*Gasmallah M., Zulkernine F., \*\*Singer A., 2020 (submitted). "Using Deep Learning with Canadian Primary Care Data for Disease Diagnosis", *Deep Learning for Biomedical Data Analysis: Techniques, Approaches and Application*, Part 3, Springer.
- [76] Zulkernine, F., and Martin, P., 2009. "Web Services Management: Towards Efficient Web Data Access", (Eds.) Kelley G., *Selected Readings on Information Technology Management: Contemporary Issues*, Information Science Reference, pp. 404-423, IGI Global, PA, USA.
- [77] Zulkernine, F., Martin, P., and Powley, W., 2009. "Autonomic Management of Networked Web Services-based Processes", (Eds.) Denko, M., Yang, L, and Zhang, Y., *Autonomic Computing and Networking*, part 2, pp. 333-353, Springer, USA.
- [78] Zulkernine, F., and Martin, P., 2006. "Web Services Management: Towards Efficient Web Data Access", (Eds.) Vakali, A., and Pallis, G., *Web Data Management Practices: Emerging Techniques and Technologies*, pp. 266-288, Idea Group of Publishing, PA, USA.

- **Book**

- [79] Zulkernine, F., 2009. *Web Services-Based Composite Business Process Management - Service Level Agreement Negotiation and Monitoring: Concepts, Methodologies and Current Practices towards Innovation*. Publisher VDM Verlag, available online on Amazon.com.

- **Posters**

- [80] \*Wojaczek, A., \*Gasmallah, M., Zulkernine, F., 2019. "Image Object Detection for Cancer Research", *School of Computing Creative Computing Event*, Queen's University.
- [81] \*Montgomery, C., \*Zafari, H., Zulkernine, F., 2019. "Design and Implementation of a Natural Language Customer Query Platform", *School of Computing Creative Computing Event*, Queen's University.
- [82] \*Ge, S., \*Isah, H., Zulkernine, F., 2019. "Scalable and In-memory Data Stream Analytics Pipeline"
- [83] \*Hogan, I., \*Gasmallah, M., Zulkernine, F., 2019. "Image component separation in image super resolution", *School of Computing Creative Computing Event*, Queen's University.
- [84] \*Raltson, K., \*Zafari, H., Zulkernine, F., 2019. "An Intelligent Multilingual Chatbot", *School of Computing Creative Computing Event and at the Canadian Undergraduate Conference in Artificial Intelligence (CUCAI)*, Queen's University.
- [85] \*Skarupa, M., \*Mahfuz, S., Zulkernine, F., 2019. "Edge computing for wearable sensors", *School of Computing Creative Computing Event*, Queen's University.
- [86] \*Liu, R., \*Isah, H., Zulkernine, F., 2019. "Design and Implementation of a Data Lake", *School of Computing Creative Computing Event*, Queen's University.
- [87] \*Chen, Y., Zulkernine, F., 2019. "An Intelligent Interactive Robotic System", *School of Computing Creative Computing Event*, Queen's University.

- [88] \*Weatherhead, A., Dove, D.\*, Zulkernine, F., 2018. “Convolutional Networks for Self-Driving Cars”, *School of Computing Creative Computing Event*, Queen’s University.
- [89] \*Dewar, B., Zulkernine, F., Martin, K., 2018. “Correcting Physical Sign Data in the CPCSSN Database”, *School of Computing Creative Computing Event*, Queen’s University.
- [90] \*Barrette, D., Dove, D.\*, Zulkernine, F., 2018. “Ultrasonic Sensor-Driven Autonomous Vehicle”, *School of Computing Creative Computing Event*, Queen’s University.
- [91] \*Rychlo, L., Zulkernine, F., 2018. “Automation of Lab Reporting to Public Health Ontario: A Cognitive Computing Approach”, *School of Computing Creative Computing Event*, Queen’s University.
- [92] \*Judd, M., Zulkernine, F., 2018, “Detecting Low Back Pain in Electronic Medical Records with Machine Learning”, *School of Computing Creative Computing Event*, Queen’s University.
- [93] \*Petkov, M., Zulkernine, F., 2018. “A Recursive and Adversarial Approach to Single Image Super Resolution”, *School of Computing Creative Computing Event*, Queen’s University.
- [94] \*Gasmallah, M., Zulkernine, F., 2018. “Tracking in Video Object Detection Using Neural Networks”, *School of Computing Creative Computing Event*, Queen’s University.
- [95] \*Poole, A., Zulkernine, F., 2017. “Detecting Dyslexia Through Auditory Processing”, *School of Computing Creative Computing Event*, Queen’s University.
- [96] \*Leung, T., Zulkernine, F., 2017. “The Use of Virtual Reality in Education: A Cognitive Approach to Understanding How Learning is Enhanced”, *School of Computing Creative Computing Event*, Queen’s University.
- [97] \*Lansky, A., Zulkernine, F., 2017. “Blockchain in Decentralized Autonomous Multi-agent Systems”, *School of Computing Creative Computing Event*, Queen’s University.
- [98] \*Creighton, J., Zulkernine, F., 2017. “Towards Building a Hybrid Model for Predicting Stock Indexes”, *School of Computing Creative Computing Event*, Queen’s University.
- [99] \*Sherar, M., Zulkernine, F., 2017. “Implementation of a Particle Swarm Optimization Clustering Algorithm in Apache Spark for High Dimensional Data”, *School of Computing Creative Computing Event*, Queen’s University.
- [100] \*Ahmed, T., Zulkernine, F., Cordy, J.\*, 2016. “Proactive Auto-scaling of Resources for Stream Processing Engines in the Cloud”, *Poster presentation at the Conference of the Center for Advanced Studies (CASCON)*, Toronto, Canada.
- [101] \*Chan, A., Zulkernine, F., 2016. “ArchiGen: Genetic Algorithms for Multi-Objective Design Optimization”, *School of Computing Creative Computing Event*, Queen’s University.
- [102] \*Rhee, T., Zulkernine, F., 2016. “Predicting Movie Box Office Revenue using Neural Networks”, *School of Computing Creative Computing Event*, Queen’s University.
- [103] \*Lafreniere, D., Zulkernine, F., 2016. “Using Machine Learning to Predict Hypertension from Electronic Health Records”, *School of Computing Creative Computing Event*, Queen’s University.
- [104] \*Aylward, C., Zulkernine, F., 2015. “Assistive Technology for Dyslexia”, *School of Computing Creative Computing Event*, Queen’s University.
- [105] \*Fitzpatrick, C., Zulkernine, F., 2015. “Cognitive Science Methods and Video Game Design”, *School of Computing Creative Computing Event*, Queen’s University.
- [106] \*Yeon, S., Zulkernine, F., 2015. “Thinking by Doing: Mental Imagery - Is It Real?”, *School of Computing Creative Computing Event*, Queen’s University.
- [107] Zulkernine, F., Martin, P., Soltani, S., Powley, W., Mankovski, S., and Addleman, M., 2011. “Towards a Training Oriented Adaptive Decision Support System”, *IBM Centers for Advanced Studies Conference (CASCON)*, Toronto, ON, Canada.
- [108] Zulkernine, F., Martin, P., Soltani, S., Powley, W., Mankovski, S., and Addleman, M., 2011. “Towards a Training Oriented Adaptive Decision Support System”, *MITACS Elevate Research Showcase*, Toronto, ON, Canada.



- [109] Zulkernine, F., Martin, P., and Wilson, K., and Mankovski, S., 2008. “A Policy-based Negotiation Broker Middleware for Automated SLA Negotiation for Web Services”, *IBM CASCON*, Toronto, ON, Canada.
- [110] Zulkernine, F., Martin, P., and Wilson, K., 2007. “A Middleware Solution to Composite Web Process Monitoring”, *IBM CASCON*, Toronto, ON, Canada
- [111] Zulkernine, F., Martin, P., and Wilson, K., 2008. “A Middleware Solution to Composite Web Process Monitoring”, at *Consortium for Software Engineering Research (CSER) Meeting (June'08)*, London, ON, Canada.
- **Demo and Tools**
- [112] “Xu – a query expansion tool”, 2019. Morgan, Isah, Zulkernine, available online at <https://github.com/queensbamlab>.
- [113] “SPARK-PSO: Text clustering using Particle Swarm Optimization on Spark”, 2017, Sherar M., Zulkernine, F., available online at <https://github.com/mattsherar/Apache-Spark-KM-PSO>.
- [114] “Cloud-based AaaS (CLAaaS)” on CPCSSN and SELHIN data analytics, 2014, ver. 3, *IBM Canada Research and Development Centre (CRDC) and SOSCIP event*, MaRS Discovery District, Toronto, ON, Canada.
- [115] “Cloud-based Analytics-as-a-Service (CLAaaS)”, 2013, ver. 2, at *IBM Center of Advanced Studies Conference (CASCON)*, Toronto, ON, Canada.
- [116] “CAPRI (Type-CAsted Pattern and Rule mIner): A Tool for Mining Complex Line Patterns in Large Log Data”, *ACM Knowledge Discovery and Data Mining (KDD) Workshop BigMine*, 2013.
- [117] “Analytics-as-a-Service (AaaS)”, demo ver. 1 with CPCSSN medical data, CASCON 2013.

## 9. TALKS AND INTERVIEWS

- **Conference Paper Presentations**

- [1] \*Wojaczek, A., Kalaydina, R.V., \*Gasmallah, M., Zulkernine, F., Szewczuk, M.\*, 2019. “Computer Vision for Prostate Cancer Spheroids Detection”. In proc. of *IEEE Symposium Series of Computational Intelligence (SSCI)*, Xiamen, China.
- [2] Kaczmarek, E., Salgo, A., \*Zafari, H., Kosowan, L.\*, Singer, A.\*, Zulkernine, F., 2019. “Diagnosing PTSD Using Electronic Medical Records from Canadian Primary Care Data”, In proc. of *IEEE Conf. on Networking, Systems and Security (NSysS)*, Dhaka, Bangladesh.
- [3] \*Ge, S., \*Isah, H., Zulkernine, F., ~Khan, S., 2019. “A Scalable Framework for Multilevel Streaming Data Analytics using Deep Learning”, *IEEE COMPSAC workshop DADA*, Milwaukee, USA.
- [4] \*Gallant, M, \*Isah, H., Zulkernine, F., ~Khan, S., 2019. “Xu: An Automated Query Expansion and Optimization Tool”, *IEEE COMPSAC: Data Driven Intelligence for a Smarter World*, Milwaukee, USA.

- **Invited Talks and Panels**

- [5] Annual R2i Summit, 2019, “Streaming Data Analytics to Cognitive Machine Intelligence”, Montreal, May 2019.
- [6] “Big Data to Machine Intelligence”, International Conference on Networking, Systems and Security (NSyS), Dhaka, Bangladesh, Dec 2018.
- [7] “Cognitive Intelligence”, Principal’s Symposium, Queen’s University, Nov 2018, Kingston, Canada.
- [8] “Analytics, Intelligence and Cognition”. June 2017. High Performance Computing Symposium (HPCS), Kingston, ON, Canada.
- [9] “From Analytics to Intelligence”, Oct 2016, invited speaker, Faculty interview, School of Computing, Queen’s University, Kingston, ON, Canada.
- [10] “From Analytics to Intelligence”, May 2016, invited speaker, 5<sup>th</sup> International Conference on Informatics, Electronics and Vision (ICIEV), Dhaka, Bangladesh.

- [11] “Big Data Analytics on the Cloud”, May 2016, keynote speaker, International Symposium on Multidisciplinary Engineering (ISMDE), IUBAT University Premises, Uttara, Dhaka, Bangladesh.
- [12] “Enabling Execution of Big Data Analytic Workflows on the Cloud”, Jan. 2014, seminar, Dept. of Computer Science, University of Manitoba, Winnipeg, Canada.
- [13] “Mining Line Pattern: A Mandatory Step in Complex Log Data Analysis”, Nov. 2012, Consortium for Software Engineering Research (CSER) meeting, Toronto, ON, Canada.
- [14] “Towards a Training-Oriented Adaptive Decision Support System”, Nov. 2011, CSER meeting, Toronto, ON, Canada.
- [15] “Modeling to Management of Service-based Business Processes, Are we there yet?”, Aug. 2010, seminar, School of Computing, Queen’s University, Kingston, ON, Canada.
- [16] “SLA-driven Automated Service Composition”, Nov. 2010, invited speaker, Automatic Service Composition Workshop, International Conference hosted by the Centers for Advanced Studies Research (CASCON), IBM Canada Software Laboratory, Toronto, ON, Canada.
- [17] “Modeling to Management of Service-based Business Processes, Are we there yet?”, Jun. 2010, seminar, Dept. of Computing Science, University of Alberta, Edmonton, Alberta, Canada.
- [18] “Modeling to Management of Service-based Business Processes, Are we there yet?”, Aug. 2010, seminar, School of Computing, Queen’s University, Kingston, ON, Canada.
- [19] “The Comprehensive Service Management Middleware, the Negotiation Broker and the Performance Monitor for Complete Service-based Composite Process Management.”, Jun. 2009, seminar, Service Oriented Applications (SOA) group, Fondazione Bruno Kessler, Trento, Italy.
- [20] “A Middleware for Monitoring Composite Web Service Processes”, Nov. 2007, CSER meeting, Toronto, ON, Canada.
- [21] “Comprehensive Service Management Middleware”, Nov. 2007, CSER meeting, Toronto, ON, Canada.
- **Interview and Media**
- [22] Interview with CAC Queen’s about their contributions in supporting my research, 2018.
- [23] Interview with R2i about the work of Mohammed Gasmallah, a graduate student at BAM lab, on evaluating the performance of the new Power9 server and IBM Vision tool for image object recognition.
- [24] Queen’s Computing professor awarded Canada Foundation for Innovation Funding, *News-Events*, May 2018, online at <https://www.universityresearch.ca/news-events/queen-s-computing-professor-awarded-canada-foundation-for-innovation-funding/>
- [25] Introducing the first tenure-track computing professor in 10 years, *Queen’s Journal*, Jan 2017, <https://www.queensjournal.ca/story/2017-01-16/news/introducing-the-first-tenure-track-computing-professor-in-10-years/>

## 10. MULTIDISCIPLINARY RESEARCH AND COLLABORATIONS

As an expert in big data and AI, I have established a very strong multidisciplinary research network at Queen’s and across Canada. We build intelligent big data analytic pipelines by applying data ingestion, processing, analytics and AI modeling techniques on multimodal audio, video, text, signal, numeric and hybrid structured, semi-structured and unstructured data.

Queen’s University	
• Dept. of Biomedical and Molecular Sciences	Computer vision to detect cancer cells
• Engineering (Mechanical, Civil, ECE)	AI, big streaming IoT data analytics from wearable sensors, sensors in autonomous vehicles, audio and video cameras
• Rehabilitation	
• IBM, CUTRIC	
• School of Business	AI for stock market prediction, sentiment analysis
• Gnowit	

• Department of Law	AI for legal case and trademark analytics
• Department of Pediatrics	Detect neonatal mortality
• Kinesiology	Streaming data ingestion and analytics
• School of Family Medicine • CPCSSN	AI for medical decision support from primary care data
• Psychology • Linguistics	AI for prescreening dyslexia Modeling language acquisition
<b>Across Canada</b>	
<ul style="list-style-type: none"> <li>• Psychiatry and Health Policy, University of Manitoba</li> <li>• Psychiatry, Western University</li> <li>• Psychology, Ryerson</li> <li>• Parkwood Institute Operational Stress Injury Clinic</li> <li>• Centre for Health Services, Univ. of British Columbia</li> <li>• Engineering and Data Science, University of Victoria</li> <li>• Primary Care Unit, University of Alberta</li> <li>• Medicine, Dalhousie University</li> <li>• Canadian Forces Health</li> <li>• InfoClin Inc.</li> <li>• Calian Ltd.</li> <li>• Ministry of Health and Long Term Care, Toronto</li> </ul>	Using AI and natural language processing for the diagnosis of Post-Traumatic Stress Disorder in patients from the electronic health records in the primary care data specifically from unstructured text data in doctors' chart notes.
<b>International</b>	
<ul style="list-style-type: none"> <li>• Psychology, Psychiatry, University of Toledo, USA</li> <li>• Service oriented computing, Fondazione Bruno Kessler, Trento, Italy</li> <li>• SAP Germany</li> <li>• Neuroscience, Cambridge University</li> </ul>	<ul style="list-style-type: none"> <li>AI for PTSD and suicide diagnosis</li> <li>Data and workflow management services</li> <li>Web services workflow validation</li> <li>Service oriented computing</li> <li>AI for recommendation system</li> </ul>

## 11. VISITORS - BAM Lab

<b>Visiting Fellows</b>	
<p>Mona Awad Alkhattabi, PhD Associate Professor, College of Computer and Information Sciences Information System Department A-Imam Muhammad Ibn Saud Islamic University</p>	Visiting Professor Summer 2018

## ADMINISTRATION

## 12. DEPARTMENTAL ACTIVITIES

- **Director, Big data Analytics and Management Laboratory** (since 2017).  
Supervise students' research.
- **Coordinator, Cognitive Science Program, School of Computing** (since 2014).  
Revise and update program, extend collaboration with related disciplines, attend open house events, act as student advisor and main contact person for the program.
- **Member, Undergraduate Committee, School of Computing** (since 2017).  
Review undergraduate programs and courses, and address issues regarding teaching and research.
- **Member, Promotion, Renewal and Tenure Committee, School of Computing** (2018-2019).  
Review and assess eligibility of faculty members for promotion and tenure.

- **Member, CRC Computing and DBMS, Appointment committee, School of Computing (2018-2019).**  
Participate in the recruitment process of a new faculty member for a joint CRC position with DBMS (Department of Biomedical and Molecular Sciences).
- **Member, Appointment committee, School of Computing (2018-2019).**  
Participate in the recruitment process of new faculty members.

### 13. PhD / MSc DEFENCE AND SUPERVISORY COMMITTEES

I regularly serve as a member of Graduate Supervisory and Examination Committees (32 HQPs). A summary of responsibilities and a list of these students are given below. None of these students were directly supervised or co-supervised by me.

Chair	Head's Rep	MSc Thesis Examiner	MSc Project Examiner	PhD Supervisory Committee	PhD Thesis Examiner	PhD Comp. Examiner	Total
2	5	9	2	11	5	4	38

Student	Period	Role
1. Abdullah Ahmad Zarir School of Computing, Queen's University	Sep 2019	Internal Examiner MSc Defense Committee
2. Yang Zhang School of Computing, Queen's University	Sep 2019	Member PhD Supervisory Committee
3. Mojtaba Bagherzadeh School of Computing, Queen's University	Sep 2019	Head's Delegate PhD Defense Committee
4. Zhendong Sha School of Computing, Queen's University	Sep 2019	Member PhD Supervisory Committee
5. Amany Kandil School of Computing, Queen's University	Sep 2019	Member PhD Supervisory Committee
6. Diego Alejandro Paez Civil Engineering	May 2019	Chair PhD Thesis Defense
7. Moemen Yasser Electrical & Computer Engg., Queen's University	May 2019	External Internal Examiner MASc Thesis Defense
8. Mosab ALFaqeh School of Computing, Queen's University	Jan 2019	Member PhD Supervisory committee
9. Daniel Clarke School of Computing, Queen's University	Jan 2019	Examiner MSc Thesis Defense
10. Omar El Zarif School of Computing, Queen's University	Sep 2018	Member PhD Supervisory Committee
11. Sara Elsayed School of Computing, Queen's University	Aug 2018	Examiner, Supervisory committee PhD Comprehensive Defense
12. Karim Jahed School of Computing, Queen's University	Nov 2018	Examiner PhD Comprehensive Defense
13. Blake Pyman School of Computing, Queen's University	Nov 2018	Head's Representative MSc Thesis Defense
14. Ehsan Noei Electrical & Computer Engineering, Queen's University	Sep 2018	Examiner (int/ext) PhD Thesis Defense
15. Guyves Achdari School of Business, Queen's University	Sep 2018	External Examiner PhD Thesis Defense
16. Victoria Tolls	Aug 2018	External Examiner MSc Thesis Defense

Electrical and Computer Engineering, Queen's University		
17. Jenne Zhang School of Computing, Queen's University	Aug 2018	Internal Examiner MSc Thesis Defense
18. Sudharshan Gopikrishnan School of Computing, Queen's University	May 2018	Examiner MSc Project
19. David Sears School of Computing, Queen's University	Jan 2018	Head's Representative PhD Thesis Defense
20. Asmaa Ali School of Computing, Queen's University	Sep 2017	Examiner, Supervisory committee PhD Comprehensive Defense
21. Majid Babaei School of Computing, Queen's University	Sep 2017	Member PhD Supervisory Committee
22. Harshith Vasanth Gayathri School of Computing, Queen's University	Dec 2017	Examiner MSc Project
23. Iman Faraji, Electrical & Computer Engineering, Queen's University	Dec 2017	Chair PhD Thesis Defense
24. Philip Aucoin Psychology, Queen's University	Oct 2017	External Examiner MSc Thesis Defense
25. Yu Zao, Electrical & Computer Engineering, Queen's University	Sep 2017	External Examiner PhD Comprehensive-II
26. Yonghui Huang, Electrical & Computer Engineering, Queen's University	Jul 2017	External Examiner MSc Thesis Defense
27. Francisco Antonio de la Parra School of Computing, Queen's University	Jun 2017	Examiner PhD Thesis Defense
28. Douglas Martin School of Computing, Queen's University	Apr 2017	Head's Representative PhD Thesis Defense
29. Shadi Khalifa School of Computing, Queen's University	Mar 2017	Examiner PhD Thesis Defense
30. Ahmad Nagib Abdallah School of Computing, Queen's University	Sep 2017	Member PhD Supervisory Committee
31. Amir Mohamad School of Computing, Queen's University	Sep 2016	Member PhD Supervisory Committee
32. Suhas Kabinna School of Computing, Queen's University	May 2016	Examiner MSc Thesis Defense
33. Geoff Harrison Dept. of Psychology, Queen's University	Sep 2015	External Examiner MSc Thesis Defense
34. Nathan Braniff School of Computing, Queen's University	Aug 2015	Examiner MSc Thesis Defense
35. Boris Madzar School of Computing, Queen's University	Oct 2015	Head's Representative MSc Thesis Defense
36. Sara Elsayed School of Computing, Queen's University	Sep 2014-	Member PhD Supervisory Committee
37. Asmaa Mohamed Ali School of Computing, Queen's University	Oct 2014-	Member PhD Supervisory Committee

## 14. ORGANIZATIONAL ACTIVITIES

- **Symposium and Workshop Organization**
  - Chair, IBM CASCON workshop on "Deep Learning: Introduction and Hands-on", Toronto, ON, Canada, Nov 4, 2019.

- Chair, IBM CASCON workshop on “Large Scale Multilevel Streaming Data Analytics”, Toronto, ON, Canada, Oct 30, 2018.
- Co-organizer, IBM CASCON workshop on “Ultra Large Scale Services”, Toronto, ON, Canada, Nov. 2012.
- Organizer, MITACS Symposium on “Knowledge in the Cloud”, Kingston, ON, Canada, May 2011.
- **Conference Session Chair**  
Conduct conference session on research paper presentation, introduce speakers, manage Q&A, distribute awards and certificates as needed in both national and international conferences/workshops.
  - IEEE Symposium Series of Computational Intelligence (SSCI), 2019.
  - IBM Centers for Advanced Studies Conference (CASCON), 2019.
  - IEEE Information Technology Electronics, and Mobile Communications Conference (IEMCON), Nov 2018.
  - IBM Centers for Advanced Studies Conference (CASCON), short paper session, 2017.
  - International Conference on Cloud Computing and Services Science (CLOSER), Session 1: Cloud Computing Enabling Technology, Rome, Italy, Apr. 2016.
  - International Conference on Information, Electronics and Vision (ICIEV), Session: IT and Information System, Dhaka, Bangladesh, May 2016.
  - International Conference on Electrical Engineering and Information & Communication Technology (iCEEiCT), Big Data and Information and Communication Technology (ICT) track, Dhaka, Bangladesh, May 2015.

## 15. SCIENTIFIC REVIEWS

- **Reviewer, Research Grant Applications**
  - SOSCIP Scientific Advisory Committee, since 2017.
  - NSERC Discovery 2020.
  - Mitacs Accelerate, 2019, 2020.
  - NSERC CRD, 2019.
- **Reviewer & Member, Conference Program Committee (23 different int’l conf. & workshops)**  
Responsibilities: Review papers submitted to conferences as expert in my research area for acceptance.
  - International Conference on Cloud Computing and Services Science (CLOSER), Prague, 2020.
  - International Conf. on Networking, Systems and Security (NSyS), Dhaka, Bangladesh, 2019,
  - ACM Symposium on Applied Computing (SAC) Cloud Computing track, 2019, Limassol, Cyprus.
  - Canadian AI (CAN AI) conference, Ottawa, ON, Canada, 2020.
  - IBM Centers for Advanced Studies Conference (CASCON), Toronto, Canada, Oct. 2019.
  - ACM Symposium on Applied Computing (SAC) Cloud Computing track, Greece, 2019.
  - CLOSER, Heraklion, Crete, Greece, 2019.
  - International Conference on Computer Science and Application Engineering, Sanya, China, 2019.
  - CANAI conference, Kingston, ON, Canada, 2019.
  - Intl. Workshop on Biological Knowledge Discovery from Data (BIOKDD) at the Intl. Conf. on Database and Expert Systems Applications (DEXA), 2018.
  - IEEE Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON), British Columbia, Canada, 2018.
  - ACM SAC Cloud Computing track, Pau, France, 2018.
  - International Conf. on Networking, Systems and Security (NSyS), Dhaka, Bangladesh, Jan. 2018.
  - IBM Centers for Advanced Studies Conference (CASCON), Toronto, Canada, Oct. 2018.
  - International Conference on Cloud Computing and Services Science (CLOSER), Funchal, Madeira, Portugal, March 2018.
  - IEEE Women in Engineering Conference – Electrical and Computer Engineering (WIECon-ECE), Pattaya, Thailand, Dec. 2018.

- International Conference on Electrical Engineering and Information & Communication Technology (iCEEICT 2018), Dhaka, Bangladesh, Sep. 2018.
- ACM SAC Cloud Computing track, Marrakesh, Morocco, 2017.
- International Conference on CLOSER, Porto, Portugal, Apr. 2017.
- International Workshop on Uncertainty in Cloud Computing (UCC'17) with Dexa'17.
- The 4th International Conference on Advances in Big Data Analytics (ABDA'17).
- The 1st International Conference on Applied Cognitive Computing (ACC'17).
- The 13th International Conference on Grid, Cloud, and Cluster Computing (GCC'17).
- The 3rd International Conference on Health Informatics and Medical Systems (HIMS'17).
- The 18th International Conference on Internet Computing and Internet of Things (ICOMP'17).
- International Conference on NSyS, Dhaka, Bangladesh, Jan. 2017.
- IBM CASCON, Toronto, Canada, Nov. 2016.
- International Conference on CLOSER, Rome, Italy, Apr. 2016.
- IEEE WIECon-ECE, Pune, Maharashtra, India, Dec. 2016.
- International Technical Conference (ITC 28) in Networking Science & Practice, Würzburg, Germany, Sep. 2016.
- ACM SAC Cloud Computing track, Pisa, Italy, Apr. 2016.
- IEEE/ACM Utility and Cloud Computing (UCC), St. Raphael Resort, Limassol, Cyprus, Dec. 2015.
- ACM SAC Cloud Computing track, Salamanca, Spain, Apr. 2015.
- International Conference on CLOSER, May 2015.
- IEEE WIECon-ECE, Dhaka, Bangladesh, Dec. 2015.
- International Conference on Parallel Processing (Euro-Par), Aug. 2014.
- IEEE Ubiquitous Mobile Cloud (UMC), Jun. 2014.
- ACM SAC Cloud Computing track, Gyeongju, Korea, Mar. 2014.
- ACM SAC Cloud Computing track, Coimbra, Portugal, Mar. 2013.
- ACM SAC Cloud Computing track, Trento, Italy, Mar. 2012.
- ACM SAC Cloud Computing track, Taichung, Taiwan, Mar. 2011.
- IEEE Information Reuse and Integration (IRI), Aug. 2011.
- Symposium on Middleware and Network Applications (MNA) with International Conference on Information Technology New Generations (ITNG), Las Vegas, NV, USA, Jul. 2010.
- ACM SAC, Cloud Computing track, Sierre, Switzerland, Mar. 2010.
- International workshop on Middleware Engineering (with IEEE Computer Software and Applications Conference, COMPSAC), Seoul, South Korea, Jul. 2010.
- International workshop on Middleware Engineering (ME), Jul. 2009.
- ACM SAC Middleware Engineering (ME) track, Fortaleza, Brazil, Mar. 2008.
- International Conference on Cyber-Enabled Distributed Computing and Knowledge Discovery (CyberC), Oct. 2010.
- **Reviewer, Journals (19 different peer reviewed journals)**  
Responsibilities: Review papers submitted to journals as expert in my research area for acceptance.
  - IEEE IoT, July 2020.
  - PLOS ONE, May 2020.
  - IEEE Access, July 2019.
  - IEEE Intelligent Systems (IS) Magazine, Dec. 2014.
  - Journal of Data and Knowledge Engineering (DATAK), Elsevier, 2018.
  - Journal of Network and Systems Management (JONS), Elsevier, 2018.
  - Journal of Software Practice and Experience, Wiley, 2017.
  - Journal of Computer Science and Technology, Springer, 2017.
  - IEEE Reviews in Biomedical Engineering, IEEE, 2017.
  - International Journal of Communication Systems, Wiley, 2017.

- IEEE Transactions on Services Computing (TSC) Journal, IEEE, 2016, 2008-2010.
- International Journal of Services Technology and Management (IJSTM), Inderscience, 2016.
- International Journal of Communication Systems (IJCS), Wiley, 2015.
- Journal of Systems and Software (JSS), Elsevier, 2013-2014.
- International Journal of Big Data Intelligence (IJBDI), Inderscience, 2014.
- IEEE Transactions on Parallel and Distributed Systems (TPDS), IEEE, 2013.
- Service Oriented Computing and Applications (SOCA) Journal, Springer, 2011-2013, 2008.
- Canadian Journal of Electrical and Computer Engg. (CJECE), Inderscience, IEEE Canada, 2012.
- Journal of Computer Science and Technology (JCST), Springer, 2012-2013.
- ACM Transactions on the Web (TWEB) on special issue for the International Conference on Service Oriented Computing (ICSOC), ACM, 2007.
- Journal of the Egyptian Mathematical Society, 2008, additional reviewer VLDB, 2004.
- **Reviewer, Book Chapter**
  - Multiple chapters of the book titled “Autonomic Computing and Networking”, Springer (Eds. M. Denko, Y. Zhang, L. Yang), 2008.

## 16. COMMITTEE MEMBERSHIPS AND AWARDS

- **Member, Canadian Artificial Intelligence Association (CAIAC) and conference program committee of Canadian AI conference** (since 2018).  
Serve as an expert in the committee and review conference papers.
- **Big Data Analytics Expert, SOSCIP Scientific Advisory Committee** (since 2017).  
Represent Queen’s as expert on Big Data, participate in bi-weekly meetings to review new applications and progress of existing SOSCIP funded projects.
- **AI Expert, Canadian Urban Transit Research and Innovation Consortium (CUTRIC) Advisory Group** (since 2019).  
Perform review of research proposals as an expert.
- **AI and Data Science Expert, Queen’s Conflicts Analytics Lab** (since 2019).  
Serve as a big data analytics and AI expert in collaborative research with Faculty of Law and School of Business, Queen’s University.
- **Licensed Member, Professional Engineers of Ontario** (since 2010).
- **Member, IEEE and ACM**
- **NSERC Postdoctoral Fellowship Award 2012**
- **Best Paper Award, 2007**, “Conceptual Framework for a Comprehensive Service Management Middleware”, In Intl. IEEE Workshop on Service Oriented Architectures in Converging Networked Environments (SOCNE) with IEEE Advanced Information on Networking & Applications(AINA), Niagara, ON, Canada.