Dr. Christopher Chun Ki Chan Curriculum Vitae

Table of Contents

Curriculum Vitae

Christopher Chan, PhD.

Canadian-Born Citizen

Current address: Japan

Cell: +81 070 9093 9848

christopher.c.chan@torontomu.ca

Education

Doctor of Philosophy in Computer Science, *2018*

Department of Computer Science, Toronto Metropolitan University, Toronto, Canada.

Dissertation Title: "A Simulation Algorithm Capable of Modelling Spatial Impact Points from the Neutralization of an Improvised Explosive Device"

Advisor: Dr. Alexander Ferworn

Master of Science in Computer Science, *2015*

Department of Computer Science, Toronto Metropolitan University, Toronto, Canada.

Thesis Title: "Game-Based Threat Assessment Tool for Improvised Explosive Device Neutralization Training"

Advisor: Dr. Alexander Ferworn

Honours Bachelor of Science in Computer Science and Co-op Completion, *2013*

Department of Computer Science, Toronto Metropolitan University, Toronto, Canada.

Employment (Sorted Most Current)

Engineer Specialist in Humanities / International Services, Minagawa Co. Ltd. ***2023-Present***

I am currently working as a engineering specialist for a private company in Japan in which I am involved in projects ranging from international outreach, internal business technical improvements and advancements, and implementation of e-commerce solutions utilizing tailor-built AI-ecommerce technologies.

Adjunct Professor, Department of Computer Science, Toronto Metropolitan University, Ontario, Canada

https://www.torontomu.ca/cs/our-people/christopher-chan/

Assistant Professor, Department of Information Management, Chaoyang University of Technology, Taiwan, Taichung, ***2019-2022***

I was a contract Assistant Professor at the Chaoyang University of Technology in Taichung, Taiwan. My research focus involves HCI/HRI, deep learning, mechanical analyses, and small-scale robotics. I am teaching Artificial Intelligence, Deep Learning, Big Data, and the Internet of Things for graduate students and C# and Web Programming for undergraduate students. I am a reviewer for 20 different conferences and journals including IEEE Access, Emerald's Journal of Knowledge Management and MDPI's Risks, and a technical committee member 4 international conferences. My contract stipulates that I fulfill a publishing quota of at least 2-3 journals or a combination of 1-2 conferences and journals per academic year. I am also a technology coordinator for an in-house IEEE-sponsored Scopus indexed conference managed by CYUT and a principal investigator for a bio-medical visualization lab for the Department of Information Management. My teaching evaluations from students average 4.7/5 for all my courses.

Post-doc Researcher, Department of Information Engineering, National Taiwan Ocean University, ***2019***

My role as a postdoctoral researcher is to assist Professor Jun-Wei Hsieh in research on novel Deep Learning architectures, in which our current focus is Ship Detection and Recognition research. My assistance includes translating state-of-the-art new Deep Learning architectures into publication formats, understanding the intricacies of any proposed network, and delivering world-class writing and analysis to top journals and conferences. This work includes guiding and teaching Masters and PhD students in their work and converting their results into peer-reviewed publications.

Assistant Research Professor, Department of Electronic Engineering, National Taipei University of Technology (Taipei Tech), Taiwan, ***November 2018 - 2019***

I was employed as a Research Assistant Professor in the Department of Electronics at the National Taipei University of Technology. My research focus is Information Forensics and Information Security and Deep Learning for Information Security and Smart Car Applications. During my

contract as a Research Assistant Professor, I also supervise Masters and PhD students in their thesis and research work and teach computer science-related undergraduate courses.

Blockchain Software Architecture Consultant, Capital Blockchain and IVehda, Toronto, Ontario, Canada ***March 2018 – October 2018***

I was employed as a software architecture consultant to build a blockchain software architecture solution that provides secure end-to-end non-subjective (factual) information specific to an individual's application for employment. I was a consultant for Capital Blockchain of Toronto, working in partnership with IVehda, a software consultant firm. We developed a proof of concept model for the solution and provided specific software architecture design guidelines for implementing Hyperledger Fabric blockchain methodology into the system.

Sessional Lecturer, University of Ontario Institute of Technology, Toronto, Ontario, Canada, ***April 2018 – September 2018***

I was a sessional lecturer for a spring/summer course at the University of Ontario Institute of Technology for computer architecture. This course introduces the fundamental basics of computer architecture, organization, and design. Topics covered in this course include computer systems generation: main-frame, mid-range, micro-computers; peripherals and interfaces; bus design; input/output systems and technologies; central processing units: arithmetic logic and control units; semiconductor memory (RAM and ROM), cache memory; digital logic; integer and floating-point arithmetic, pipelining and parallelism, and C programming. It is targeted to undergraduate students and bride degree programs for information technology security, networking, game development, and entrepreneurship.

Continuing Education Personal Tutor, Toronto Metropolitan University Chang School for Continuing Education, Toronto, Ontario, Canada, ***2017 – Present***

I provide one on one tutoring for continuing education students that request additional assistance to excel in areas of related interests. For example, current and past data science students ask for my support and guidance for an online machine learning competition called Kaggle. This competition is open to the public and provides a suite of datasets for various problems. It requires students to find innovative data cleaning techniques and tailor machine learning algorithms to public datasets such as credit card fraud detection. I assist in any coding-related issues, suggest relevant algorithms, and ensure a presentable entry for Kaggle.

Instructor, Toronto Metropolitan University Chang School for Continuing Education, Toronto, Ontario, Canada, ***2017 – 2018***

I was an instructor for the standard and fast-track program at Toronto Metropolitan University Chang School for Continuing Education for the Certificate in Data Analytics, Big Data, and Predictive Analytics. This certificate provides a strong foundation in analytics, tools, and statistics. It is targeted to individuals who need to use data analytics, big data, and predictive analytics to optimize performance at various levels in a wide range of sectors or are employed in a related field such as data warehousing, data management, and IT. This course provides the necessary

credentials for career promotion or other professional enrichment. Upon completing this certificate, graduates are prepared to take the Institute for Operations Research, and the Management Sciences (INFORMS) Certified Analytics Professional (CAP®) exam to become certified professionals in this burgeoning field. As evidence of teaching effectiveness, I have received a personal reference letter from one of the students in my class attached to my teaching portfolio.

Expert Tutors, ***2017-2018***

To further my desire to teach and continually learn from others. I was employed by Expert Tutors from Ontario to tutor students from grade 3 to grade 12. For each school year, I am matched with one or two students to assist them with homework help, provide additional work for practice and guide them through their education. I am employed to facilitate learning and help bridge the knowledge gap in science, technology, engineering, and math and help them seek answers on their own.

Doctoral Students Guidance - Personal Tutor, Toronto Metropolitan University, Toronto, Ontario, Canada, ***2016-Present***

I provided personal advice and guidance to Ph.D. students in finding a suitable and relevant thesis topic for the successful completion of a PhD. in Computer Science at Toronto Metropolitan University. For example, a Ph.D. student requested Agile Programming methods and developing business models for Agile environments. I assisted the student in determining areas of focus within the Agile development field, finding niche areas for improvement, and techniques to research additional resources continually. The student benefitted from the assistance by arriving at a firm and presentable candidacy proposal.

MapYourProperty Inc., Lead Back End Server Developer, ***2013 - 2018***

When MapYourProperty Inc. (https://www.mapyourproperty.com) was founded, I was instrumental as part of the start-up team to build the back end server as a lead developer for the online business platform that is now deployed as an all-in-one mapping and analytic tool for Canadian based land development. I manage a team of developers to build our back-end server from scratch. I develop server-side applications in PHP and configure MySQL and PostgreSQL databases and ensure to the online platform and web applications are functional and optimized for speed and efficiency. My duties also involve migrating old frameworks into industry-standard frameworks and version control such as Gitlab, PHP 7, and Symfony.

Microsoft, Software Development Engineer in Test, ***2013 – 2014 (Summer Internship - 4 months)***

In Microsoft Seattle Research Lab, I assisted in developing functional tests and model-based test suites for feature work in the messaging area. I collaborated with developer interns to implement product and test code in parallel and designed and wrote test design specifications for feature work in messaging area. I performed competitive analysis on iPhone and Android phones for the messaging area.

Graduate Teaching Assistant, Toronto Metropolitan University, Toronto, Ontario, Canada, *2012 – 2018*

As a graduate assistant, I assisted in creating core course material, designing assignments, grading midterms and exams. I provided student-tailored feedback on assignments, projects, tests, and exams for 200 students within a 1-2 day time frame. For example, in the Toronto Metropolitan University Chang School for Continuing Education courses for data science and big data analytics, students often refer to me for my expertise and the additional notes that I consistently post on a digital learning platform each week regarding errors/typos/hints on the labs or frequently asked questions about the course material. I build strong GA-student relations and ensure that common issues are communicated to the instructor and that common issues are resolved for all students via blackboard and announcements promptly. I also provide students with a rubric attached with their feedback and provide relevant and immediate communication to students' queries. I am proficient in all computer science instructional core material for 3rd, 4th-year courses, graduate courses, and some continuing education courses as I have thoroughly recorded all teaching material and notes.

Government of Ontario, Lead Software Developer, Superior Court of Ontario JITO, *2011 – 2018*

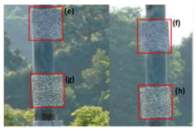
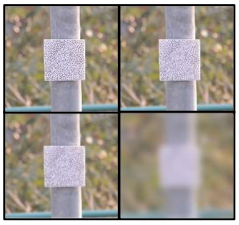
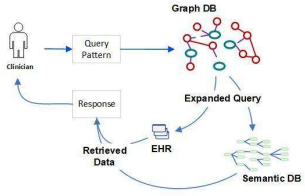
In the Government of Ontario, I am hired to assist Senior Law Officers with developing database management system tools and scheduling software for the Court of Appeals and Superior Court of Ontario. This software incorporates rules and adheres to varying restrictions relating to scheduling appropriate experts to each unique court case. Furthermore, I developed an automated information retrieval system that automates the cleaning of judicial database records with advanced queries from active directories and online websites. I also developed additional functionalities for the current Ontario Note Taking software in Ontario Courts' criminal and Ontario family justice system. My role also includes serving as the research and development bridge for JITO, incorporating academic theoretical research into their business models such as scheduling software and virtualization methodologies.

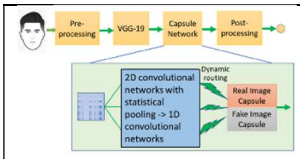
IBM Canada Inc. QA and SVT for DB2 Data Warehouse, *2010 – 2011 (16 months – Co-op)*

At IBM, I executed DB2 complex test plans and test cases in C, Java, and Perl on various Windows and Linux multi-partitioned OS environments. I worked closely with software development engineers and managers through the defect/product life cycle, focusing on DB2 source code and data warehouse workload applications. I monitored DB2 stability and performance in high-stress workloads for online transactions. I restructured IBM Websphere automation buckets. I filed two patent disclosures related to automation tooling software for DB2 v10 and BASH real-time debugging.

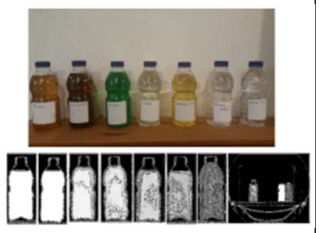
Current and Past Research Projects

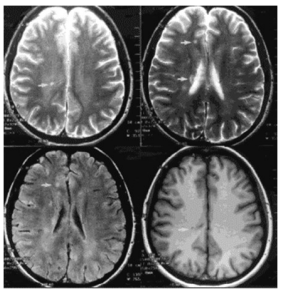
Significant Projects:	Description	Dates	Collaborators

Deep CNN Classifier for Intelligent DIC Preprocessing in Large Structure Health Monitoring 	Recent advances in obtaining an optimal pattern in saliency and uniqueness require operators' experience and prior metrics. Our research proposes a preprocessing methodology to automatically classify the saliency and uniqueness of a localized pattern for DIC processing of a large structure for structural health monitoring.	2020-Present	David Kumar, and Chih-Hung Chiang
Localized High and Low-Resolution CNN Classifier for Evaluation of Fiducial Markers in Image Processing 	A system that can classify whether a marker in a real-world image is of a high fidelity sub-image resolution or not. The low fidelity image resolution of a marker in a real-world image produces correlation errors in DIC processing. Our study proposes a binary classifier for high and low-resolution fiducial markers as a preprocessing image processing step towards determining the quality of fiducial markers in real-world images.	2020-Present	Chih-Cheng Chen, and Steven Delaney
Patient Healthcare Big Data Treatment Determination using Graph DB, Semantic Web, and Blockchain Technologies 	Clinicians increasingly encounter less interaction time with their patients because of the cognitive effort required to navigate increasingly high patient data volumes. As a result, governments look towards a unified patient-centric healthcare system to provide a solution that presents clinicians with the most relevant patient healthcare data based on the clinician's role and current healthcare scenario.	2019-Present	Steven Delaney and Doug Smith
Blockchain and Deep Learning Techniques for Combating Deepfake Media	This research involves designing a theoretical framework that enables proof of authenticity (PoA) for digital media using a decentralized blockchain using multiple LSTMs as	2019-Present	Vimal Kumar, Chih-Cheng Chen, Steven Delaney, Munkhjargal

	a deep encoder for creating unique discriminative features, which is then compressed and hashed into a transaction. Our work assumes we trust the video at the point of reception. Our contribution is a decentralized blockchain framework of deep discriminative digital media to combat deepfakes.		Gochoo, Cheng-Fu Yang
Ship Hull Identification System for Human Robot Interaction 	Ship Hull Identification for public safety, border control and marine based monitoring is challenging as ship identification labels are difficult to recognize by visual inspection especially in cluttered and noisy environments. Our solution is a CNN-based visual inspection system for ship hulls in real time on an embedded system, allowing for multiple ship hull recognition with high accuracy.	2019-2020	Jun-Wei Hsieh, Ping-Yang Chen, Munkhjargal Gochoo, Chien-Yao Wang, and Mark Hong-Yuan Liao
Intelligent Homecare Systems using Deep Learning Vision Techniques in HRI-based Assistive Technologies 	Intelligent Homecare Systems are often inconsiderately deployed to help the physically disabled and elderly as these systems are assumed to reduce the need for personal care and enhance the quality of life. We modify current homecare systems such as ASUS Zenbo and Sharp Robohon using augmented deep learning (multibox detector (SSD)), to better monitor and recognize specific human activity or lack of.	2018-2019	Trung-Hieu Le, Shih-Chia Huang, Senior Member, IEEE, and Da-Wei Jaw
Determining Splatter Impact Points from a Disruptor Shot on a Successfully Neutralized Threat	Currently, when EDU professionals are dealt with neutralizing an IED, one way to neutralize an IED threat is to use a disruptor to fire high-velocity water to separate the components of	2015-2018	Halton Police, Sunnybrook Hospital,

(Funded by NSERC CREATE ADERSIM and OGS) 	an IED before it explodes in an uncontrolled manner. Our current methodology allows for injecting an arbitrary mock IED into a game simulation, and reason about the splatter impact points from a disruptor shot for EDU training purposes.		Toronto Police Service (TPS), Network-Centric Applied Research Team (Primary Investigators: **C. Chan, A. Ferworn)**
Unmanned Aerial Vehicle Guided Improvised Explosive Device Shrapnel Dispersal Simulation 	With regards to UAV-delivered shrapnel payloads, we design a methodology to compute, model, and simulate a Directionally Focused Charge (DFC) explosive, delivered and deployed on an Unmanned Aerial Vehicle (UAV), with simple particle game engine physics heuristics, for estimating shrapnel trajectories and areas of impact on urban terrain. We assert that this methodology can provide a response and counter-IED teams involved in explosive threat detection with relevant information about the estimates of the risk associated with significant shrapnel impact in urban areas.	2016-2018	Network-Centric Applied Research Team (Primary Investigators: **C. Chan, A. Ferworn)**
Disaster Scene Path Planning with Automatic Access Hole Finding 	The structural collapse of a building may cause people to become trapped underneath the rubble. Emergency workers responding to such disasters are tasked with searching for and extracting trapped victims. An important step in the process involves searching for trapped victims and access points that may lead rescuers into under rubble voids. Our work builds on top of previous algorithms that aim to speed up and relieve some of the work first responders are tasked	2013-2018	Town of Caledon Bolton Police Station, Network-Centric Applied Research Team (Primary Investigators: **C. Chan, A. Ferworn)**

	with by autonomously detecting access holes, leading to voids in the rubble. Shortest path algorithms such as Dijkstra's algorithm are applied to these access points' geographical location to provide additional information to first responders.		
Model Creation and Game-Based Manipulation of Chemical, Biological, Radiological, Nuclear and explosives (CBRNe) Threats (Funded by NSERC CREATE ADERSIM and OGS) 	When specialized response teams deal with CBRNe-related incidents, one of the guiding principles is to avoid contact with the threat until the nature of the threat can be determined. Our research demonstrates that we can safely create, inspect and manipulate a 3D model of a suspected CBRNe threat within a physics-based game engine where models are created from extremely accurate data gathered from Computed Tomography (CT) sensors.	2013-2018	Sunnybrook Hospital, Toronto Police Service (TPS), Ontario Provincial Police (OPP), Proparms Montreal, Network-Centric Applied Research Team (Primary Investigators: **C. Chan, A. Ferworn)**
Explosive Disposal Unit Simulation Training (EDUST) (Funded by NSERC CREATE ADERSIM and OGS) 	EDU personnel training is often expensive and complex involving the use of specialized disruption equipment, hours of experimentation, and some risk. In this project, we use methodology learned from DSR and apply it to the improvised explosive device (IED) neutralization task and provide users with reasoning relevant to the neutralization process.	2013-2017	Sunnybrook Hospital, Toronto Police Service (TPS), Ontario Provincial Police (OPP), North York Emergency Task Force (ETF), Network-Centric Applied Research Team

			(Primary Investigators: **C. Chan, A. Ferworn)**
Effective Visualization of Patient Brain Disorders using Digital Imaging 	This work aims to implement a technique for characterizing and extracting significant, robust and informative features from electroencephalography (EEG) signals that represent the interictal migraine with aura brain state. Current visualization solutions for EEG are not useful for doctor-patient interaction; we aim to find a visualization that accounts for the multitude of data and their relations to each other in a meaningful way to doctors and patients.	2017-2018	Ryerson Mechanical Engineering and Industrial Engineering (MEIE), Ryerson Digital Media (DM), Headache Sciences Inc., (Primary Investigators: **D. Doidge, M. Garingo, W. Lewis, C. Chan, A. Ferworn)**
Utilizing Unmanned Aerial Vehicles (UAV) to Locate **Wandering People with Dementia) (Funded by NSERC CREATE ADERSIM)** 	The focus of this work is on finding a lost patient with dementia. The objective is to provide a theoretical model to support the Search and Rescue Operations (SAR) in finding lost people with dementia through the use of Unmanned Aerial Vehicles (UAVs).	2017-2018	Department of Politics and Public Administration (PPA) Faculty of Arts (FoA), Network-Centric Applied Research Team (Primary Investigators: **D. Hanna, C. Chan, A. Ferworn)**
3D Disaster Scene Reconstruction with UAV and RGB-D	Ongoing work in 3D Scene Reconstruction is used to build model rubble of collapsed buildings with the hope that we can eventually characterize rubble and provide	2012-2017	Ontario Provincial Police (OPP),

Sensor 	additional situational awareness from the reconstructed model. This solution is a much-needed Urban Search and Rescue study.		Town of Caledon Bolton Police Station, Network-Centric Applied Research Team (Primary Investigators: **C. Chan, T. Zannon, J. Tran, S. Herman, A. Ferworn)**
Archaeological Exploration Project in El-Hibeh 	Small scale robots are developed to address the problem of looter tunnel inspection at the "Busa" dig site in Egypt. This research merges traditional archaeological research methods with new methods of exploration and information retrieval. The research involved creating a 6-wheel tunneling tethered robot that was deployed in 2017 for tunnel inspection at the "Busa" dig site.	2016-2017	Department of History, Berkeley University of California, Ministry of State for Antiquities (SCA), Network-Centric Applied Research Team (Primary Investigators: **J. Li, J. Tran, C. Chan, A. Ferworn)**

Honours and Awards

- Taiwan Ministry of Science and Technology Early Research Professor Grant, 3 Million NTD, 2020-Present.
- Chaoyang University of Technology Intelligent Micro Aerial Vehicle Research Proposal Funding, 20 Million NTD (Department of Aerospace Engineering), 2019-2021 as lead AI-Coordinator.
- Chaoyang University of Technology Bio-Tech Visualization Lab, $10 Million NTD, 2020-Present, as lead Principal Investigator.
- Taiwan Ministry of Science and Technology Einstein under 35 Research Grant, 1 Million NTD, 2018-2019

- Ryerson Early Doctoral Completion Award, $10,000 CAD, 2018
- NSERC CREATE ADERSIM Grant, $17,000 CAD, 2017-2018.
- NSERC CREATE ADERSIM Grant, $10,000 CAD, 2016-2017.
- Ontario Graduate Student (OGS) Scholarship, $15,000 CAD, 2014-2015.
- NSERC (ENGAGE) Grant, $25,000 CAD, 2014 with DreamQii Inc.
- Ontario Graduate Student (OGS) Scholarship, $15,000 CAD, 2013-2014.

Research Interests

- **AIoT and Industry 4.0**
- **Algorithms**
- **Artificial Intelligence**
- **Application Development**
- **Autonomous Systems**
- **Blockchain**
- **Cloud Services and Emerging Trends in IT**
- **Computational Public Safety (CBRNe, USAR, EDU, TPS, and OPP response)**
- **Cybersecurity**
- **Data Science and Data Analytics**
- **Deep Learning**
- **Design Thinking**
- **Disaster and Emergency Management**
- **Hardware Engineering**
- **Human Computer Interaction**
- **Human Robot Interaction**
- **Internet of Things**
- **Machine Learning**
- **Mechatronics and Control**
- **Networking**

Strong Research Focuses and Ongoing Projects/Collaboration with International Scholars

- **Human-Computer Interaction**
- **Human-Robot Interaction**
- **Robotics (Land, Aquatic, and Aerial)**
- **Simulations**
- **Serious Games**
- **Service Robots**
- **Software Engineering**
- **Process Automation**

Publication List

Christopher Chun Ki Chan, Chih-Cheng Chen*, Steven Delaney, and Alexander Ferworn, “Towards the use of High Resolution Depth Maps and Convolutional Neural Networks for Atopic

Dermatitis Severity Recognition" *3rd IEEE Eurasia Conference on Biomedical Engineering, Healthcare and Sustainability 2021 (ECBIOS)*

Chan, Christopher CK, Steven Delaney, Chih-Cheng Chen, and Alexander Ferworn, "A Markerless High Resolution Structural Health Monitoring Framework for Smart Cities" *IEEE Technology & Engineering Management Conference 2021 (TEMSCON)*

Chan, Christopher CK, Chih-Cheng Chen, Steven Delaney, Cheng-Fu Yang, "Policy and Value Deep RL for Temporal Language-Agnostic Street Image Captioning" *Eurasian Conference on Educational Innovation 2021 (ECEI)*

Chan, Christopher CK, David Kumar, Chih-Hung Chiang **"**Coarse and Fine Localized CNN Classifier for Intelligent DIC Preprocessing in Large Structure Health Monitoring Sample" *SPIE Smart Structures & Nondestructive Evaluation 2021 Digital Forum (SPIE)*

Juan Yan, Le Gao, Nina Dai, Li Cai, Jialan Shi, Qingshan Xu, and **Christopher Chun Ki Chan**, "Reducing Raw Emissions from a Gasoline Direct Injection Engine via Sensor-aware Diluted Combustion" *Sensors and Materials, Special Issue on Novel Materials and Sensing, Technologies on Electronic and Mechanical Devices*

Chan, Christopher Chun Ki, and Chih-Cheng Chen. "Continuous Real-time Automated Attendance System using Robust C2D-CNN." *2020 3rd IEEE International Conference on Knowledge Innovation and Invention (ICKII)*, pp. 96-99. IEEE, 2020.

Steven Delaney, Doug Schmidt, **Christopher CK Chan**, "Present Clinicians with the Most Relevant Patient Healthcare Data through the integration of Graph DB, Semantic Web and Blockchain Technologies" *Workshop-MAW-2021: The 14-th International Symposium on Mining and Web (MAW-2021)*

Chan, Christopher Chun Ki, Vimal Kumar, Steven Delaney, and Munkhjargal Gochoo. "Combating Deepfakes: Multi-LSTM and Blockchain as Proof of Authenticity for Digital Media." *In 2020 IEEE/ITU International Conference on Artificial Intelligence for Good (AI4G), pp. 55-62. IEEE, 2020.*

Zhuang, Xueqiang, Yiqun Xu, Yali Gao, Guanglou Sun, Tianjin Lin, and **Christopher Chun Ki Chan***. "Remote Data Transmission Technology Based on BeiDou Satellite Navigation Sensor System Onboard Ship." *Sensors and Materials 33, no. 2 (2021): 715-726.*

Li, Tie-Jun, Chih-Cheng Chen, Jian-jun Liu, Gui-fang Shao, and **Christopher Chun Ki Chan*.** "A Novel THz Differential Spectral Clustering Recognition Method Based on t-SNE." *Discrete Dynamics in Nature and Society 2020 (2020).*

Juan Yan, Le Gao, Nina Dai, Li Cai, Jialan Shi, Qingshan Xu, and **Christopher Chun Ki Chan*.** "Reducing Raw Emissions from a Gasoline Direct Injection Engine via Sensor-aware Diluted Combustion". *Sensors and Materials 33, no. 5 (2021): 1675-1685.*

Qian Liu, Jie Tang, Cheng-shuai He, and **Christopher Chun Ki Chan*.** "Use of Temperature Sensors in Testing Soil Humus Content in Saline Wetland in Response to Freeze-Thaw Cycles" *Sensors and Materials 32, no. 10 (2020): 3355-3372.*

Yuqing He, Lei Lei, Guangsong Yang, Chih-Cheng Chen, **Christopher Chun Ki Chan***, and Kuei-Kuei Lai. "Computed Tomography Image Recognition with Convolutional Neural Network Using Wearable Sensors". *Sensors and Materials 32, no. 10 (2020): 3517-3530.*

Chan, Christopher CK, Alexander Ferworn, Jimmy Tran, Rodney Yip "Innovation in Experimental Education – Learning Human-Robot Interaction (HRI) Through a Mock Reconnaissance CBRNe Threat Mission" *Special issue on Representation Learning for Human and Robot Cognition, 2019 ACM Transactions on Human-Robot Interaction (THRI)*

Chan, Christopher CK, Steven Delaney, Doug Schmidt "Natural Language Processing for Productivity Metrics for Software Development Profiling in Enterprise Applications" *Artificial Intelligence and Cloud Computing Conference (AICCC), 2018 International Conference Proceedings Series by ACM*

Chan, Christopher CK, Alexander Ferworn, Andy Olesen, Craig Dunfield "Simulating Naïve Particle Dispersion as a Result of High Velocity Projectile Impact".

Chan, Christopher CK, Alexander Ferworn, and David Tran "A Rudimentary Approach to Unmanned Aerial Vehicle Guided Improvised Explosive Device Shrapnel Dispersal Simulation" *Intelligent Networking and Collaborative Systems (INCoS), 2016 International Conference.* IEEE, 2017.

Chan, Christopher CK, Alexander Ferworn, and Lee Chin "Towards Determining Relative Densities for Common Unknown Explosives in Improvised Explosive Devices" *International Humanitarian Technology Conference (IHTC)*, 2017 IEEE Canada International. IEEE, 2017.

C. Chan and A. Ferworn, "Serious Gaming for Improvised Explosive Device Neutralization Training", *The 3rd International Conference on Industrial Engineering and Applications (ICIEA 2016)*, 5-7 June, Hong Kong, MATEC Web of Conferences. Vol. 68. EDP Sciences, 2016

*signifies corresponding author, which is equivalent weighing to first author in Taiwan, Asia.

Best Paper Awards and Invited Talks

2021	**Best Paper Award for The 3rd IEEE Eurasia Conference on Biomedical Engineering, Healthcare and Sustainability 2021 (IEEE ECBIOS 2021)**
2020	**Best Paper Award for The 4th Eurasian Conference on Educational Innovation 2021 (IEEE ECEI 2020)**
2019	**Best Paper Award for The 3rd IEEE International Conference on Knowledge Innovation and Invention 2020 (IEEE ICKII 2019)**
2018	**Speaker at the Artificial Intelligence and Cloud Computing Conference, Tokyo, Japan, Awarded Best Presenter**
2018	**Invited Speaker at ASTM E54.09 Standard Committee Meeting in connection with National Institute of Standards and Technology (NIST); Gaithersburg, MD**
2017	**BDIA Invited Speaker at The Fields Institute for Research in Mathematical Sciences**
	Lecture: Towards Determining Relative Densities for Common Unknown Explosives in Improvised Explosive Devices

Teaching Experience (University Level and Professorship Level)

2019-Present **Assistant Professor for Dept. of Information Management** – Chaoyang University of Technology, Taichung, Taiwan

2018-2019 **Sessional Instructor for Computer Architecture –** University of Ontario Institute of Technology, Toronto, Ontario, Canada

2017-2018 **Instructor for Data Organization for Data Analysis Hybrid –** Toronto Metropolitan University, Chang School, Toronto, Ontario, Canada

2017 **Guest lecturer –** Toronto Metropolitan University, Toronto, Ontario, Canada

Course: Human Computer Interaction

2013-Present **Graduate Teaching Assistant,** Toronto Metropolitan University, Toronto Ontario, Canada

Courses: Extreme Programming Agile Processes, Information Retrieval, Graphics, Bioinformatics, Adv. Computer Organization, Web Systems Development, Data Analytics Advanced Methods, Big Data Analytics Tools, Software Verification/Validation, and Software Tools for Startups

Academic Service (Journals and Conferences)

Technical Committee (Selected and Current Appointment)

2020 - Present	International Journal of Informatics and Communication Technology
2020 - Present	International Conference on Innovation and Intelligence for Informatics
2020 - Present	International Conference on e-Learning
2020 – Present	International Sustainability and Resilience Conference

Reviewer (Selected and Current Appointment)

2020 - Present	Inter Journal of Computing and Digital Systems (IJCDS)
2020 - Present	IAES International Journal of Artificial Intelligence (IJ-AI)
2020 - Present	Discrete Dynamics in Nature and Society
2020 - Present	Risks
2020 - Present	East European Journal of Psycholinguistics
2020 - Present	Computer Science and Information Technologies
2020 - Present	Defence Technology
2020 - Present	Journal of Education and Learning
2020 - Present	Emerald Publishing Limited's Journal of Knowledge Management
2020 - Present	Sustainability MDPI

2019 - Present	MDPI's Mathematics Journal
2019 - Present	Technology Advancements in Artificial Intelligence (ITCE 2020)
2019 - Present	IEEE Access
2019 - Present	Journal of Applied Sciences
2019 - Present	Elsevier's Electronic Commerce Research and Applications (ECRA)
2018 - Present	IEEE Transaction on Engineering Management (TEM)
2018 - Present	International Congress: Future Vision (ICFV)
2018 - Present	Special Issue: Emerging Technologies and Strategies in Education in the Big Data Era
2017- Present	Springer's Service Oriented Computing and Applications (SOCA)
2017- Present	Information Systems Frontiers (ISFI)
2017- Present	Journal of Network and Computer Applications (JNCA)
2017 - Present	Journal of Systems Architecture (JSA)

Academic Outreach

Chaoyang University of Technology Conference Core Committee (SSIM) and Technology Coordinator, *2019-Present*

At CYUT, I am part of the conference core committee team spearheading the first international IEEE conference to be sponsored and held by CYUT. Tasks include budgeting, website planning, establishing IEEE conference standards, budgeting, finance, marketing, and international exposure to established professors.

Chaoyang University of Technology International Society (CYIS), *2019-Present*

At CYUT, I am the lead events planner to coordinate social events to enrich and promote international staff and faculty's life and culture.

Amazon Coding Competition, *2017-2018*

Similar to Google Code Jam, Amazon also hosts an online competition annually called "Amazon Prime Code Champ" that allows participants to have a chance to be placed on leaderboards such as HackerRank when their submitted solutions exceed past records. Oftentimes, students that are interested in competitive programming challenges, participate in more than one coding challenge competition, I help gather like minded individuals, facilitate, and organize computer rooms and participate in competitive challenges as a team. For example, together with a Computer Science Master student, we tackled a coding problems ranged from level 1-3 and managed to submit a correct solution within a 3 hour time frame.

STEM Program Director Fairview Library Youth Hub, *2016-2017*

In Toronto Public Library's Fairview Youth Hub, I am a program director tasked to lead a series of workshops geared towards technology and innovation including STEM enrichment for Toronto's youth aged 13-19. As of now, I am running a series of robotic workshops that focus on coding by using a block programming IDE, and a proprietary educational robotic system called 'Sphero'. 'Sphero' can utilize sensors, timers, actuators and various gyroscopes to maneuver and navigate a cluttered environment. I deliver a ten-week workshop in which each week the workshop will increase in difficulty and build upon previous content. By the end of the ten weeks, youth will be equipped to be creators of various robotic inventions, video games, and basic computer programming.

Maker Extravaganza Festival, *2015-2018*

Toronto Metropolitan University N-CART lab participates in the annual Maker Extravaganza Festival held at Toronto Reference Library each year. The event showcases hundreds of makers, craftspeople, technologists and hobbyists to show off technology that they have created. Together with the N-CART business relations lab advisor, Rodney Yip, we manage a promotional and educational booth for the participants in Maker Festival and showcase explosive disposal (EOD) robots and unmanned aerial vehicles (UAVs). My role is to facilitate the transportation, logistics, and ensure that the equipment and robots are functional, on top of discussing our lab's research to interested participants.

Google Code Jam, *2014-2016*

Google Code Jam is a global internet-based event open for anyone who would be willing to try to solve computer programming questions. These questions are composed of multipart questions that involve innovative thinking and detailed analysis of the problem statement, which are often reflective of real-world computer-related case studies. After participating in the code jam with a few friends for 2 years, I took the initiative to involve Ryerson's Computer Science students where I oversaw and facilitated a series of coding competitions at the Toronto Metropolitan University campus. During the competition, the students in the lab and a few administrators completed many of the timed questions and successfully managed to progress to stage 2 within the time allotted. Progressing to this point in the competition is an indication of our skill level, which ranks at approximate 80th percentile of all participants (there were approximately 30 000 total participants worldwide). The highlight of my experience was that I saw a graduate student receive a recruitment email from Google offering him a full-time position as a developer. This success story had spread quickly across the campus and piqued the interest in many student groups in other disciplines such as architecture, engineering, and interior design. My initiative has led many

masters and postgraduate level students to get involved in the planning and coding process to prepare for the annual Google Code Jam.

Science Rendezvous, ***2013-2015***

For each Science Rendezvous, Toronto Metropolitan University's N-CART lab is tasked with assisting the annual event by holding a booth and demonstration that showcases robotics and computing from undergraduates and graduates at Ryerson's Computer Science department. This event reaches out to high school students and raises awareness for the programs offered by Toronto Metropolitan University. My role is to facilitate the operation, logistics, transportation and planning of the booth and equipment, as well as judge robotic competitions when requested.

IBM Student Ambassador, ***2012-2013***

An IBM ambassador is part of an outreach team employed by IBM that help students and IBM interns bridge the gap between school life and work life balance. On top of outreach to Universities, the program aims to promote IBM certifications, academic seminars and presentations for the purposes of facilitating discussion and encouraging awareness of IBM related initiatives such as IBM EPIC program for undergraduate students.

Ryerson Game Maker's Union (GMU) Executive, ***2010-2012***

The Game Makers' Union focuses on making games with a variety of game engines such as Unity, Unreal, and GameMaker. My responsibility as an executive was to contact industry professionals and alumni who now work for Google or IBM to share their experiences and provide insight of their current work environment. I have also taught students my primary specialty in Shader programming and Nvidia's CUDA parallel computing architecture to produce special effects or video post-processing.

Across U-Hub, ***2006-2010***

I am currently a volunteer high education promotional leader in a Toronto based organization for Asian and new abroad young individuals. My task has evolved into providing promotional work and specific Science, Technology, Engineering and Math (STEM) related information for young Asians especially for female youths (aged 13-21) who may have an interest in STEM related fields and careers. I provide additional resources for further outreach such as job shadowing, workshops and seminars from other leaders in STEM.

Professional Certifications (Related to HCI)

Professional Certification Program from IBM (Prometric ID PR1356605, chrisc@ca.ibm.com):

- **IBM Certified Application Developer Programming with IBM Enterprise PL/I**
- **IBM Certified Database Associate DB2 9 Fundamentals**
- **IBM Certified Database Administrator DB2 9 or Linux, Unix and Windows**
- **IBM Certified Database Associate DB2 Universal Database v8.1 Family**
- **IBM Certified Application Developer DB2 9**
- **IBM Certified Advanced Database Administrator DB2 Universal Database v8.1 for Linux, Unix and Windows**
- **IBM Certified Database Administrator DB2 Universal Database v8.1 for Linux, Unix and Windows**
- **IBM Certified Solution Designer DB2 Business Intelligence v8**
- **IBM Certified Database Administrator DB2 9 for z/OS**
- **IBM Certified Database Administrator DB2 Universal Database v8.1 for z/OS**
- **IBM Certified Application Developer DB2 Universal Database v8.1 Family**
- **IBM Certified Deployment Professional Tivoli Usage and Accounting Manager v7.1**
- **IBM Certified Specialist Tivoli Storage Manager FastBack v5.5**
- **IBM Certified Deployment Professional Tivoli Storage Productivity Center v4.1**
- **IBM Certified Information Security 2010**

Memberships and Professional Affiliations

- Member of the Institute of Electrical and Electronics Engineers (**IEEE**)
- Member of the IEEE Technology and Engineering Management Society Membership (**IEEE TEMS)**
- Member of the Association of Computing Machinery (**ACM**)
- Member of the EOD Robotics Testing Committee for the U.S. National Institute of Standards and Technology (**NIST**) reporting to the Department of Homeland Security (**DHS**) and **ASTM** International

References

Please refer to contact/reference document for academic and personal references.