Ranwa **Al Mallah**

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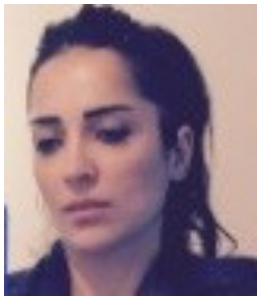

EDUCATION

September 2018	**Ph.D. in Computer and Software Engineering** Polytechnique Montréal Thesis: "Road Traffic Congestion Analysis via Connected Vehicles" Research domains: Artificial Intelligence, Computer Networks, Connected/Smart Vehicles, Cybersecurity, Cyber-Physical Systems, IoT and Telecommunications.
January 2008	**M.Sc.A. in Computer and Software Engineering** Networking - Polytechnique Montréal
January 2003	**B. ING. in Electrical Engineering** Telecommunications - Polytechnique Montréal
June 1998	**College diploma - DEC** Natural Science - Bois-de-Boulogne College

JOURNAL PUBLICATIONS

- "Prediction of traffic flow via connected vehicles." Ranwa Al Mallah, Bilal Farooq, Alejandro Quintero. Under revision in *IEEE Transactions on Mobile Computing.* Submitted in July 2019.
- "Cooperative Evaluation of the Cause of Urban Traffic Congestion via Connected Vehicles." *IEEE Transactions on Intelligent Transportation Systems.* Ranwa Al Mallah, Bilal Farooq, Alejandro Quintero. *2019.*
- "Distributed Classification of Urban Congestion Using VANET." *IEEE Transactions on Intelligent Transportation Systems 18 (9), 2435-2442.* Ranwa Al Mallah, Bilal Farooq, Alejandro Quintero. *2016.*
- "A Light-Weight Service Discovery Protocol for Ad-Hoc Networks." *Journal of Computer Science.* Ranwa Al Mallah, Bilal Farooq, Alejandro Quintero. *2009.*

Google Scholar https://scholar.google.ca/citations?user=6aIe1BEAAAAJ&hl=fr&oi=ao

ON-GOING RESEARCH

- "Attacking adaptive traffic control systems with Reinforcement Learning." *Analysis/ results/ writing in progress.*
- "Reinforcement Learning based Penetration Testing of Microgrid Control Algorithms." *Analysis/ results/ writing in progress.*
- "Recovering from Sybil Attacks on Connected Vehicles, a Min-Max Game." *Experimentation in progress.*
- "Complete SAT: Security in the Air using Tesla." *Writing in progress.*
- "Ontology development method for a security expert system: ATOM." *Writing in progress.*

PROFESSIONAL EXPERIENCE

Laboratory of Innovations in Transportation **February 2020 – Present**
Postdoctoral Research Fellow - Ryerson University

- Research and development of cybersecurity layers in the existing frameworks that are currently under development in the lab.
- Proposing attack and defence strategies, quantum-resistance, security-by-design, and privacy-by-design.
- Publication and presentation of research in top-tier journals and conferences.
- Co-training of graduate students and participating in the lab activities.

Security Lab, Laboratoire de Sécurité des systèmes informatiques **August 2018 – January 2020**
Research Assistant - Polytechnique Montréal

- Research on the safety and security of cyber-physical systems, road traffic control systems, micro-grids and air traffic control. Attacks and defenses of CPS systems.
- Participation in the training of students of Professor José Fernandez.
- Leading internal discussion sessions and reading groups.
- Organising a series of seminars in which students formally present their own research results.
- Train students in technical and scientific synthesis and presentation techniques.
- Organisation of presentations to industry partners where students develop skills they will need in their professional careers, aiming more public-specific presentations.

Le Groupe GENINOV Inc. **October 2008 - December 2013**
R&D Engineer

- Managing projects in partnership with a security firm - Palo Alto Perimeter Security Systems – Firewalls, under the Network and Information Systems Security Division,
- Intervene in the design, deployment, installation and commissioning of edge security systems of corporate networks.
- Structuring, and managing the progress of the consulting firm's bid to requests for proposals for telecommunication and computer projects.
- Manager for the project of interconnection of the offices of the General Administration of Customs (AGD) of the Republic of Haiti to the application server SYNODIAWORLD in operation phase using the platform of iDirect via satellite links SCPC, microwaves and fiber optics.
- Preparation and presentation of a training program regarding the maintenance and support of a Network Operating Center (NOC) and targeting computer and electrical engineers.
- Development of an application to determine the Line of Sight (LOS) of a wireless path from 3D digital maps.
- Integration of applications into a module of the 3G-4G network planning platform.
- Support and guide the work of the Working Group on Fixed and Mobile Number Portability established by the National Telecommunications Council (CONATEL) in Haiti.

Voysis IP Solutions **September 2003 - September 2005**
Sales Engineer

- Writing submissions for the upgrade phone systems.

- Formulation of an Option 1 with the MSW software (Mitel Sales WorkBench) for the deployment of a telephony solution in a hotel.
- Running applications on 5330 and 5340 IP Phones: Screensavers and Hospitality Applications.
- Customer training on the 3300 ICP System, 5212 IP Phone and Voicemail.
- Formulated a structured sales strategy, Business Solution Engineering, with Visio's Process Planning platform.

TEACHING EXPERIENCE

Course and lab instructor - Polytechnique Montréal **December 2016 - Present**

- Procedural programming in MATLAB : Introducing and explaining programming concepts, guiding large number of students and preparing exams.
- Fixed and mobile network security, several course modules over one year.
- Introduction to computer engineering, fall and winter sessions for two years.
- Practical sessions in procedural programming: Guiding students during sessions, preparing and evaluating assignments.

TECHNICAL SKILLS

Languages : C/C++, C#, Java, Python, Javascript, PHP, SQL.
Operation systems : Windows, UNIX, virtualisation technologies.
Networks and protocols : TCP/IP, Qualnet, NS-2, SUMO, Opnet, DHCP, NAT, PoE.
Security : Firewall, VPN, resiliency, redundancy, WireShark.
QoS : high availability, bandwidth management, VLAN (IEEE802.1p/Q), QOS, TOS/Diffserv, STP, SLA.
Artificial Intelligence: Bayesian networks, Markov chain, Decision Tree, Randon Forest, Boosting, Neural networks, Deep learning, Multitask learning, Reinforcement learning.
Telecommunication: Protocols GSM and UMTS, SS7.
Others : Latex, AutoCad, Matlab, Visual Basic, OMNeT++, Netica, Weka, Pmtk, iTetris, cabling Cat-3/Cat-5, PBX, T1/E1, BRI, PRI, LS, PyTorch, TensorFlow, cryptography, Tesla

INTERESTS

- PROFESSIONNAL AFFILIATION : Member of Ordre des Ingénieurs du Québec (OIQ)
- DISTINCTIONS :
  - **BMP innovation FRQNT-CRSNG AWARD**: The BMP is a 3-year partnership between university students and industry to make the most of the excellence of research and industrial know-how in Quebec.
  - Nominated by the pedagogical office as best lecturer for the years 2016-2017 and 2017-2018. Achieved 4.9/5.0 in student assessment of teaching.
  - Recipient of an award for the contest 'Génie en Herbe' in 1996.
- SKILLS : **Collegiality**, Scientific curiosity, Creativity, Leadership, Independent
- AUTRES : Travelling
  Volunteering at the Montreal Children's Hospital

REFERENCES

Dr. Alejandro Quintero (Research Director)
Polytechnique Montréal
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Email: alejandro.quintero@polymtl.ca

Dr. José Fernandez
Polytechnique Montréal
Phone: 514-340-4711 ext. 5433
Email: jose.fernandez@polymtl.ca