

# Kenneth Brezinski, PhD, MSc, EIT, CTech, CIT, PMP

*Industrial Controls and Networking*

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kbrezinski.github.io

## Key Qualifications

- Engineer In Training (EIT), Certified Technician (CTech), and Chemist In Training (CIT) industrial controls specialist focusing on water and wastewater systems and SCADA networking.
- Hands-on experience with IO mapping, IP subnetting, loop drawings, graphic standards (ISA 10.1), process control narratives, alarm management (ISA 18.2), FAT/SAT, control cabinet/kiosk design; able to design in AutoCAD Electrical with minimal supervision.
- Experience in designing and programming Allen Bradley (1769 and 5069) and Schneider (M340, M580 and SCADAPack) PLCs; SCADA development with VTScada and Ignition 8.1.
- Advanced knowledge of networking concepts (Network+ and Security+ certified) for IT and OT network deployments and cybersecurity assessments (per IEC 62443), including intrusion prevention and endpoint products (mainly Cisco, Fortinet and Palo Alto; EDR for Microsoft).
- PhD graduate and Post Doctoral Fellow in applied deep learning for enterprise malware threat detection, with experience programming big data, and large scalable graph, transformer, image and DNN frameworks; authorized over a dozen publications in Cyber Security and Artificial Intelligence.

## Work Experience

### Intermediate Instrumentation and Controls Designer

11/24-present

*WSP Canada, Vancouver, Canada*

- Work with the Vancouver Water & Wastewater Industrial Controls and Automation Group on developing electrical and controls design services for municipal, rural and Metro Vancouver clients, with project fees in excess of 1m+.
- Design requirements and equipment selection for control panels (120-600VAC), including main and marshalling panel enclosures, UPS (inc. bypass), ATS/MTS, power supplies, breaker sizing, networking (firewalls, switches), fuses, terminal blocks, relays; grounding, cable scheduling.
- Commission Firewalls, Switches, Protocol Converters, Access Points, Server Hardware, Virtual Machines for SCADA deployments (VTSCADA and Ignition), including VLAN segregation and subnetting, over a variety of protocols (Modbus TCP, Ethernet/IP, Fieldbus, Profibus, RS-485)
- Equipment selection and single line design (4-20mA and 0-10V 2- and 4-wire loops) for pumps, flow, pressure, temperature, transmitters, building alarms; VFD and MCC selection and requirements.
- Participate and lead SCADA workshops, PCN discussions; author SCADA masterplans; Front End MMCD, Division 1, Division 13 and 16 Specifications (5- and 6-digit).

### Systems Designer, Water & Wastewater

05/23-11/24

*WSP Canada, Winnipeg, Canada*

- Work with the Water & Wastewater Treatment group on water and wastewater solutions for the prairie region of Canada.
- Carrying out water treatment plant assessments, investigations, and process design & system optimization; including carrying out aqueous modelling of complex systems (K<sub>ow</sub>, K<sub>sp</sub>, kinetics) in the water, wastewater, mining, and oil and gas sector using Geochemist Workbench.
- Lead proposal efforts and respond to RFQ and RFPs for new contracts with industrial and municipal clients.

## **Post Doctoral Fellow, University of Manitoba, Winnipeg, MB**

11/24-present

- Lead research efforts in close collaboration with Canadian Tire Corp. executives with a focus on Malware detection of enterprise security threats and complexity analysis applied to machine learning and deep learning frameworks.
- Research agentic large language models for automated code generation for IEC 61131-3 compliant code that meets SIL requirements as per IEC 61508 for water and wastewater systems.

## **Visiting Researcher, National Institute for Informatics, Tokyo, Japan**

09/22-12/22

- Develop a graph autoencoder to detect network anomalies from backbone network traffic connecting Japanese Academic institutions to North America.

## **Data Scientist Intern, Microsoft, Redmond, WA**

05/22-08/22

- Worked with the Windows Defender for Endpoint Team on developing a supervised ML detector to alert customers in the early stages of an exfiltration or ransomware attack

## **Applied Research Scientist II Intern, Amazon Web Services, New York, NY**

05/21-08/21

- Worked with the Amazon GuardDuty threat detection research team on developing a novel meta-learner to apply weak labels to Linux binaries

## **Research Intern Lead, University of Manitoba, Winnipeg, MB**

10/19-10/22

- First authored six publications over a 3-year period in close collaboration with Canadian Tire Corp. executives with a focus on Malware detection of enterprise security threats.

## Technical Skills

PLC / SCADA	RSLogix 500, Designer 5000, SCADAPack workbench, AB Architecture Builder, Ignition 8, ControlExpert
Programming	Python (Pytorch, Tensorflow, Geometric PySpark, Git, JAX, Flax, AWS-EMR), Java, Matlab, LaTeX, MLOps (Docker, Streamlit, Plotly, MLFlow, Kinesis)
Malware Analysis	Static analysis tools such as PE View, Bintext, Dependency Walker, PEiD, OllyDBG, IDAPro; Dynamic tools such as Procmon, BurpSuite, Wireshark, API monitor; Splunk
Other	AutoCAD Electrical, ETap

## Professional Memberships

ISA	<b>Member</b> , Industrial Society for Automation
EngGeoMB	<b>Engineer In-Training (EIT)</b> , Engineers Geoscientists Manitoba
ASTTBC	<b>Certified Technician (C.Tech.)</b> , Applied Science Technologists & Technicians of BC
CTTAM	<b>Certified Technician (C.Tech.)</b> , Certified Technicians & Tech. Association of MB
PMI	<b>Project Management Professional (PMP)</b> , Project Management Institute
ACPA	<b>Chemist in Training (C.I.T.)</b> , Association of the Chemical Profession of Alberta
WCW	<b>Member</b> , Western Canada Water
WEF	<b>Member</b> , Water Environment Foundation

## Education

- 08/18-08/24 **Doctor of Philosophy**, *University of Manitoba*, Winnipeg, MB.  
Electrical and Computer Engineering
- 01/16-09/18 **Master of Science**, *University of Manitoba*, Winnipeg, MB.  
Civil Engineering
- 08/10-08/15 **Bachelor of Science**, *University of Winnipeg*, Winnipeg, MB.  
Chemistry

## Publications

A full list of my publications can be found on my personal site.