TRIUMF

Western-IEEE Presentation

Adam Newsome, P. Eng.
Team Lead – Remote Handling Electrical Systems
TRIUMF

December 1, 2021

Discovery, accelerated

My Educational Background

- Graduated from Western in 2014 – first class of B.E.Sc Mechatronic Systems Engineering
- Participated in many engineering competitions – local, provincial, and national level
- NSERC USRA student in summer of 2013
- Chair of IEEE Student Branch in 2013

IEEE Student Chapter at Western

My involvement with IEEE Student Chapter:

- Attend IEEE London meetings
- Worked with finance minister to manage budget
- IEEExtreme Programming Competition
- Miscellaneous events (ex. soldering workshop)
- Guest speaker events like this one

… things to talk about at job interviews!

My First Job – Q5X

My first job: Mechatronics Designer at Q5X in London, ON

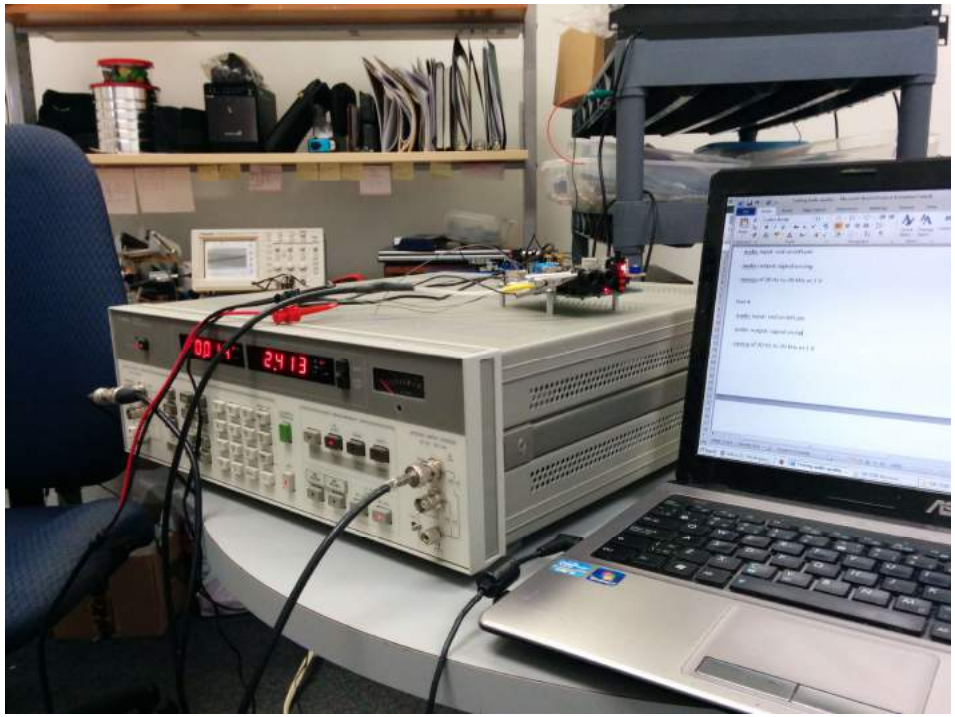
- Q5X specializes in wireless audio products
- High fidelity, durable, miniature microphone transmitters
- Broadcast sports, music and entertainment, TV

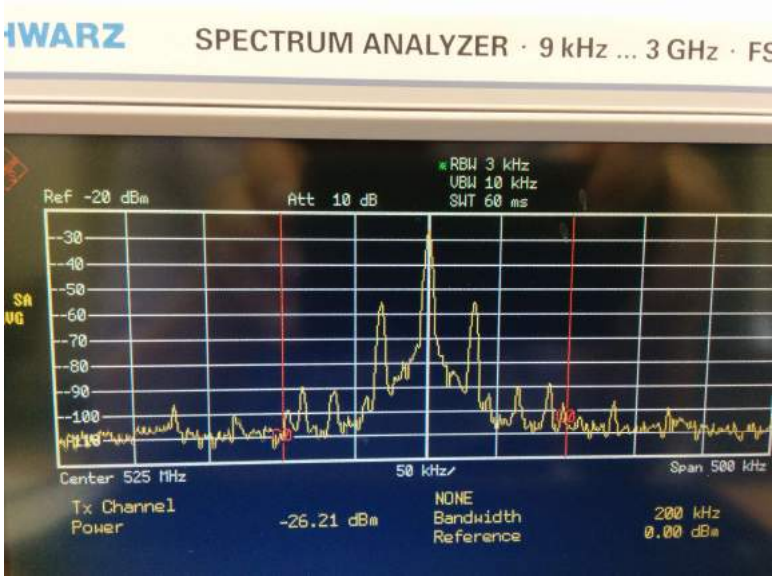
My First Job – Q5X

My role at Q5X:

- Electrical and mechanical design of transmitters and receivers
- Programming for automated calibration and testing of transmitters
- Testing and circuit analysis

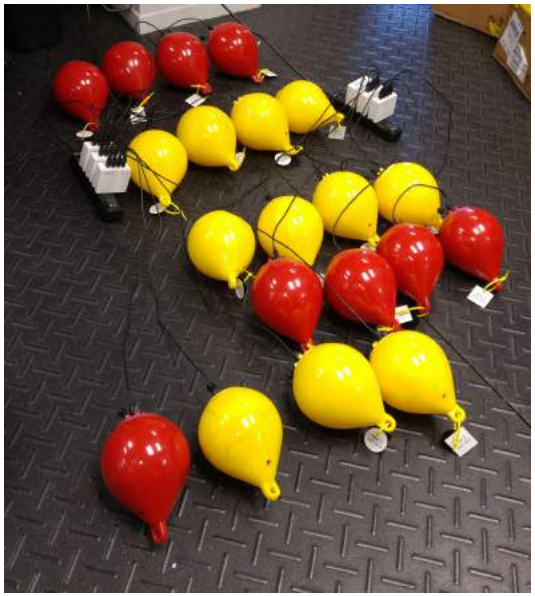
My First Job – Q5X





My First Job – Q5X

BuoyMic, used in Rio Olympics 2016:



My First Job – Q5X

- Wireless transmitters communicate to receivers via radio
- Only specific radiofrequencies can be licensed for such a use case
- The band designation standard used? IEEE Standard:

Radar-frequency bands according to IEEE standard[12]

Band designation	Frequency range	Explanation of meaning of letters
HF	0.003 to 0.03 GHz	High Frequency[13]
VHF	0.03 to 0.3 GHz	Very High Frequency[13]
UHF	0.3 to 1 GHz	Ultra High Frequency[13]
L	1 to 2 GHz	Long wave
S	2 to 4 GHz	Short wave
C	4 to 8 GHz	Compromise between S and X
X	8 to 12 GHz	Used in World War II for fire control, X for cross (as in crosshair). Exotic.[14]
K_u	12 to 18 GHz	Kurz-under
K	18 to 27 GHz	Kurz (German for 'short')
K_a	27 to 40 GHz	Kurz-above
V	40 to 75 GHz	
W	75 to 110 GHz	W follows V in the alphabet[*citation needed*]
mm or G	110 to 300 GHz[note 1]	Millimeter[12]

My First Job – Q5X

IEEE Radio & Wireless Week

16 - 19 January 2022
Las Vegas, Nevada, USA

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Important Dates

Author Registration Deadline:
30 November 2021

Hotel Reservation Cutoff Date:
22 December 2021

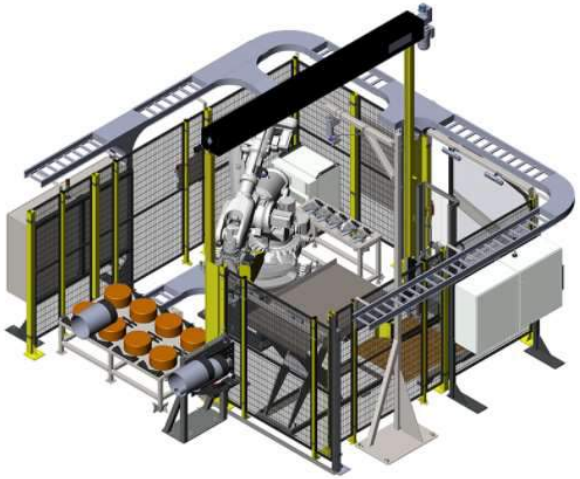
Advance Registration Closes:
23 December 2021

Radio & Wireless Week 2022:
16 - 19 January 2022

My Next Job – JMP

My next job: Robotics and Controls Specialist at JMP Solutions in London, ON

- JMP's automation division specializes in industrial automation
- System integrator for turn-key robotic solutions
- Food, oil and gas, automotive, consumer products

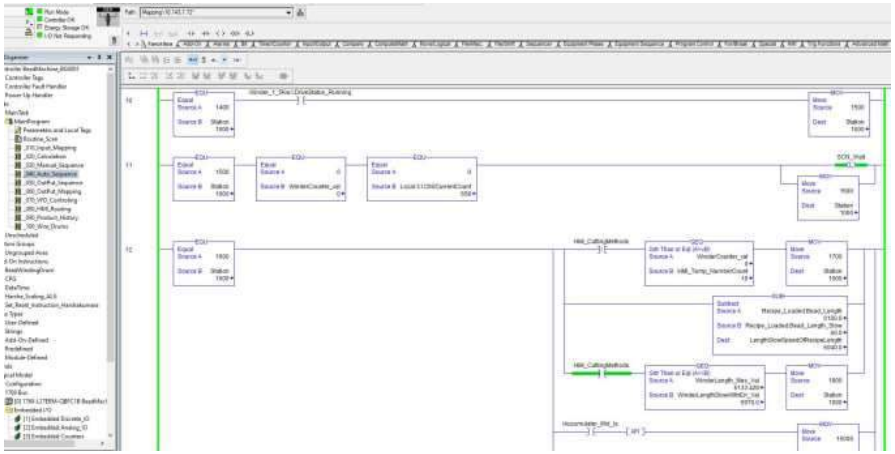


My Next Job – JMP

JMP Solutions

My role at JMP:

- Electrical design - industrial controls
- Programming: robots, PLCs, HMIs
- On-site commissioning of robotic systems



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JMP Solutions

IEEE in Robotics – RAS (Robotics and Automation Society):

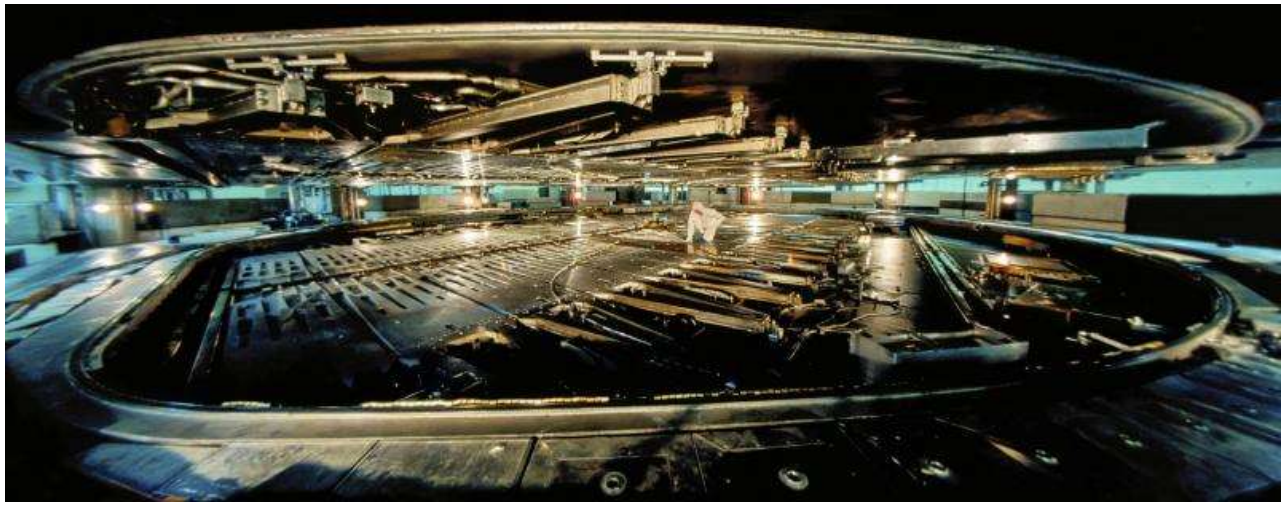
- Technical Committees focusing on research content in specific areas (surgical robotics, agricultural robotics, robot ethics, etc.)
- Conferences and workshops (ex. Conference on Automation Science and Engineering)
- Publications (ex. Transactions on Robotics)
- Educational resources for career advancement

IEEE Robotics & Automation Society

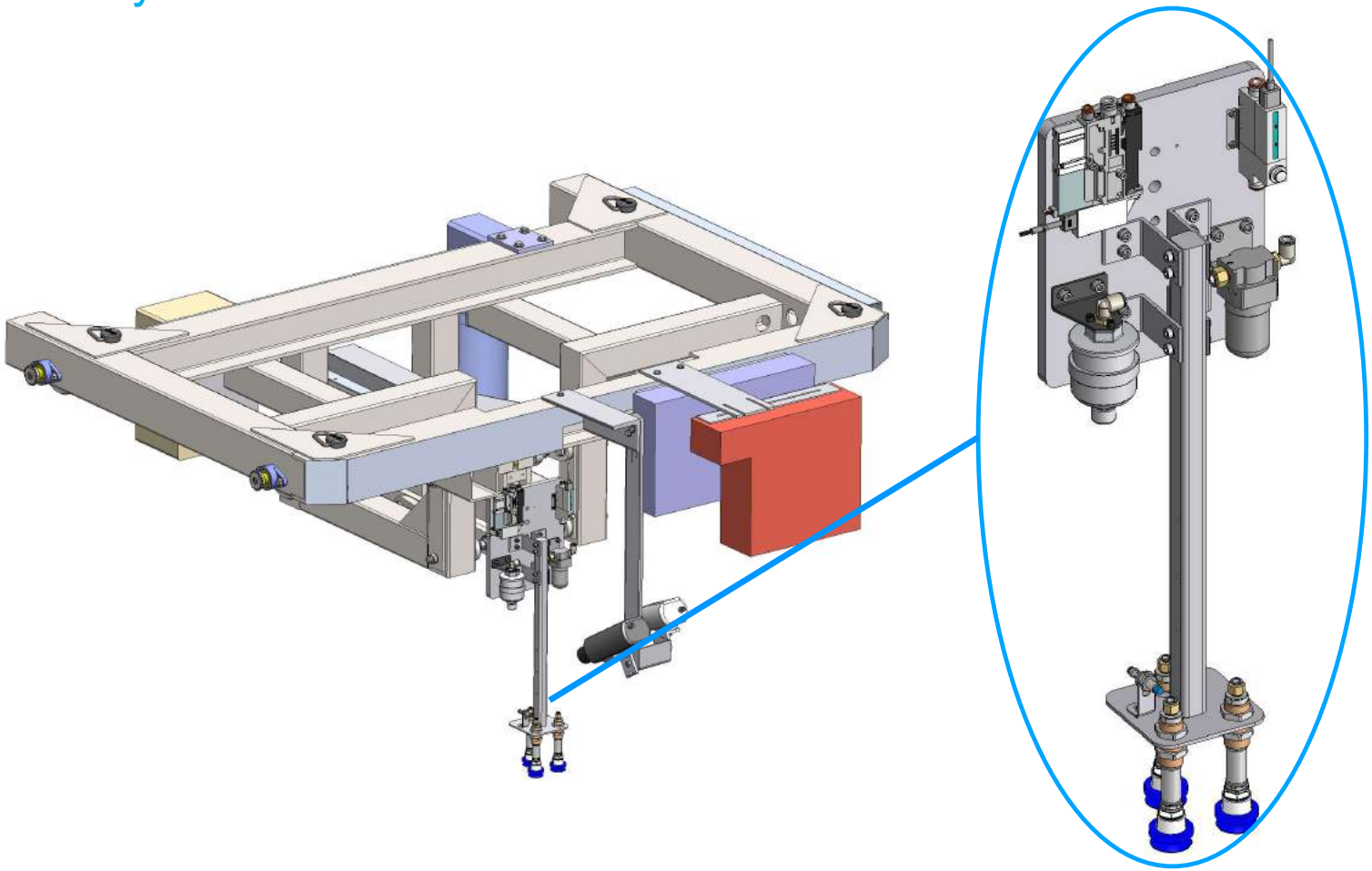
My Current Job – TRIUMF

My current job: Team Lead – Remote Handling Electrical Systems at TRIUMF in Vancouver, BC

- TRIUMF is Canada's particle accelerator facility… we build, develop, and operate accelerator and detector systems for particle physics research, nuclear medicine, materials science, and more
- Remote Handling group: focus on reducing radiation dose to personnel



My Current Job – TRIUMF



My Current Job – TRIUMF

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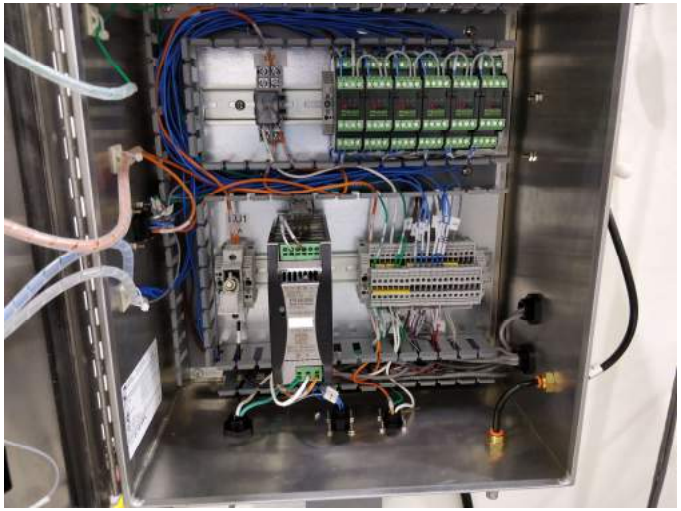
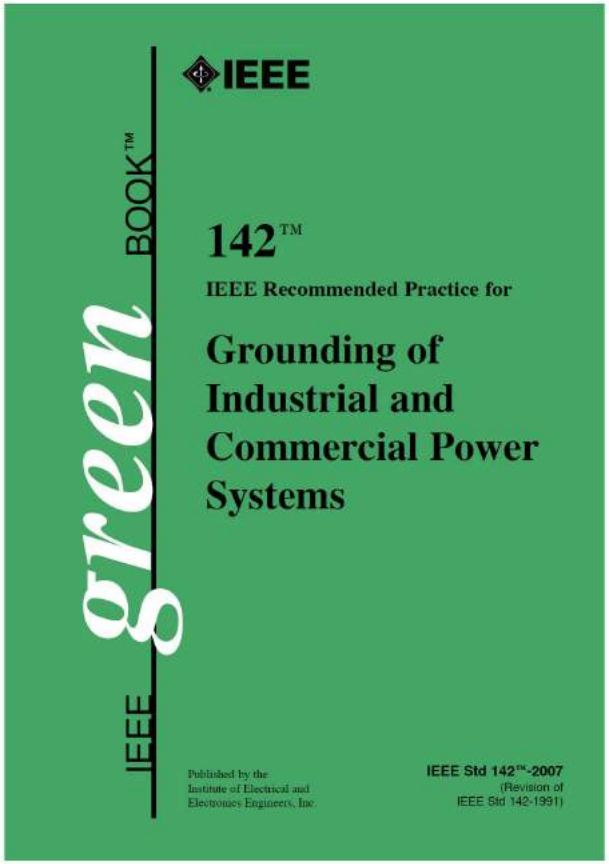
How does IEEE impact my current role?

- Many of the standards used in electrical engineering are IEEE standards (ex. IEEE Green Book)
- These standards are used to ensure safe electrical design, help with compliance to Canadian Electrical Code





IEEE Throughout My Career

- A way to gain experience with involvement IEEE student chapter – through management or activities
- A trusted source of information – standards and recommended practice
- An organization to bring together experts on subject matter via conferences, technical publications, etc.
- A networking community

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Thank you
Merci

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Discovery, accelerated