KRZYSZTOF WAWRZYN, M.Sc.

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Profile: I'm an experienced professional with hands-on work in various biomedical and engineering environments. I collaborate with academic and industry stakeholders such as scientists, software developers, and engineers on projects as either a project lead or collaborator. I plan & execute investigations/studies, perform experiments/measurements or computational simulations, collect & analyze data, troubleshoot & solve complex problems, prototype & develop computer applications/tools, and present & publish key findings.

PROFESSIONAL EXPERIENCE

RESEARCH ASSOCIATE IN MRI-RELATED MEDICAL DEVICE TESTING   Sep 2014–PRESENT
Western University, *Dept. of Physics & Astronomy.*   *London, ON*

Supported the R&D of magnetic resonance imaging (MRI)-compatible medical devices and technologies for industry & academic partners. By acting as a technical subject expert for device testing & evaluation procedures, I aided in establishing a comprehensive testing & development facility. During this role I:

- Tested and evaluated MRI-related effects on over 350 passive or active medical devices, such as pacemakers, implants, prosthetics, and leads, for over 50 clients and partners worldwide.
- Ensured initiatives are compliant with applicable SOPs, ASTM, and ISO 17025 standards by developing a quality management system, matching all laboratory requirements and needs.
- Streamlined dozens of processes by developing >60 SOPs/forms for equipment use & protocols.
- Reduced measurement uncertainty by 400% by utilizing corrective actions to non-conformities.
- Boosted efficiency of device evaluation by >50% per year by developing device test pipelines.
- Provided support for technical projects for internal & external partners, leading to 15 abstract and paper publications in scientific journals and conferences.
- Developed Python-driven applications/tools to: (1) interface laboratory test equipment, (2) record, process, and plot temporal data, and (3) simulate RF-induced heating on medical devices.

GRADUATE RESEARCH ASSISTANT IN MRI-PHYSICS   Jan 2012–Sep 2014
Robarts Research Institute, *Dept. of Medical Biophysics*   *London, ON*

Supported the R&D of hyperpolarized magnetic resonance imaging (MRI) of lung injury for a multi-disciplinary team of academic scientists and engineers. During this role I:

- Submitted, published & presented over 10 technical works at conferences, demonstrating the viability of using a novel MRI pulse sequence for lung imaging at low field (<0.1T).
- Programmed pipelines in the areas of data acquisition, data processing, and data analysis.
- Collected 500+ data sets and improved imaging efficiency by 320% by working closely with principal investigators to modify, test, troubleshoot and calibrate MRI acquisition techniques.
- Improved visual appearance and quality of signals and images by >300% by applying post-processing methods, developed in MATLAB in both the time and frequency domain.
- Programmed MATLAB routines for quantifying and analyzing data, showing statistical significance ($p<0.05$) between MRI results and histological samples.
- Led a double-blind study of radiation induced lung injury in animals from initiation to completion.

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RESEARCH ASSISTANT IN MEDICAL IMAGING   Sep. 2009–Apr 2012
Ryerson University, *Dept. of Physics*   *Toronto, ON*

- Led a pre-clinical medical imaging project to develop a novel protocol showing the feasibility of using optical imaging to detect and image electric field-induced effects in biological tissues.
- Developed signal & image techniques in MATLAB to process raw medical images and extract relevant parametric information for analyses.
- Built and maintained strong, trusting relationships with research partners by working collaboratively & managing communication between all stakeholders, resulting in publications.

TECHNICAL SKILLS

Python, MATLAB, SQL, HTML/CSS, GraphPad Prism, GitHub, Solidworks/CAD, & MS Office package.

EDUCATION

Python for Machine Learning: TECH6303 (course)	2022
Advanced Solidworks: CADD-5016 (course)	2017
Intro to Project Management: PJMG6201 (course)	2016
Master of Science, M.Sc. (Medical Biophysics)	2012–2014
Western University	*London, ON*
Bachelor of Science, B.Sc. (Medical Physics)	2007–2012
Ryerson University	*Toronto, ON*
Diploma (Computer Systems Technician)	2003–2006
Fanshawe College	*London, ON*

SELECT PUBLICATIONS AND PRESENTATIONS

1. **Wawrzyn K,** Hendriks J, Gignac D, Handler W, Chronik BA. "Comparison of Simulated and Robotically Mapped RF Fields in 64 and 128 MHz Medical Implant Test Systems". 2019 International Society for Magnetic Resonance in Medicine (ISMRM), Montréal, QC, Canada. p. 7358. (Presentation).
2. **Wawrzyn K,** Hendriks J, Handler W, Chronik BA. "Estimated Measurement Uncertainty (EMU) in Calorimetrically-Determined Whole Body SAR Values for Medical Device Evaluation Using Benchtop Radiofrequency Exposure Systems". 2018 International Society for Magnetic Resonance in Medicine (ISMRM), Paris, France. p. 8264. (Presentation).
3. **Wawrzyn K,** Drozd J, Hendriks J, Handler W, Chronik BA. "Resolving Local SAR In Vitro from RF-Field Induced Heating of a 5.0 cm Long Titanium Rod at 64 MHz and 128 MHz". 2017 International Society for Magnetic Resonance in Medicine (ISMRM), Maryland, USA. p. 2643. (Presentation).
4. **Wawrzyn K,** Ouriadov A, Hickling S, and Santyr G. "Mapping [129]Xenon ADC of Radiation-Induced Lung Injury at Low Magnetic Field Strength Using a Sectoral Approach". 2015 International Society for Magnetic Resonance in Medicine (ISMRM), Toronto, Canada (Presentation).
5. **Wawrzyn K**, Demidov V, Vuong B, Harduar MK, Sun C, Yang VXD, Doganay O, Toronov V, and Xu Y. "Imaging the Electro-kinetic Response of Biological Tissues with Optical Coherence Tomography". *Optics Letters* 38, no. 14 (2013): 2572-2574.