CURRICULUM VITAE

Xiao Fan Ding, MSc

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SUMMARY

Xiao Fan is experienced in academic research with a strong foundation in imaging modalities such as MRI and CT in a clinical setting and for non-destructive evaluation. He has demonstrated a good ability to collaborate across a wide range of disciplines, including pharmaceuticals, dentistry, agriculture, and tissue engineering among others. He is passionate about scientific communication, teaching, and enjoys working as part of a team.

Technical Skills: Microsoft Office | PyTorch | TensorFlow | Keras | MATLAB | Python | Bash | HPC | Adobe Creative Suite | SolidWorks | 3D Rendering | 3D Printing | FEA Modeling | Medical Devices | ISO/ASTM Standards | Bacterial Culturing | Aseptic Technique | GLP

Soft Skills: Communication | Academic Writing | Literature Review | Teaching | Multidisciplinary Collaboration | Adaptability | Multitasking | Time Management | Detail Oriented

EDUCATION

2022 – Present	**PhD Biomedical Engineering,** University of Saskatchewan
2017 – 2019	**MSc Medical Biophysics,** The University of Western Ontario
2013 – 2017	**BSc Hons Biology,** Ryerson University

PROFESSIONAL EXPERIENCE

Dec 2021 – Present
Visiting Worker
Canadian Light Source Inc., Saskatoon SK, Canada

- Developed image processing and post-processing analysis methods using synchrotron radiation.
- Experienced using tensorflow to develop machine learning applications for image segmentation.
- Large data handling and high-performance computing.

Sep 2020 – Present
Graduate Research Assistant
Division of Biomedical Engineering, University of Saskatchewan, Saskatoon SK, Canada

- Biocompatible staining using gold nanoparticles for hydrogel scaffolds from natural polymers e.g., gelatin and alginate.
- Trained in rat handling, surgery, post-op monitoring, and euthanasia.

Mar 2019
Conference Organising Volunteer
Lawson Health Research Institute, London ON, Canada

- On-site promotion of the use of the mobile phone application for London Health Research Day.

Sep 2017 – Aug 2019
Graduate Research Assistant
The xMR Labs, The University of Western Ontario, London ON, Canada

- Numerical modeling of magnetic materials and the electromagnetic field created by an MR scanner.

- Analysis of measurement error and uncertainty in standard test methods by ASTM International and the ISO

Sep 2016 – Apr 2017 **Undergraduate Research Assistant**
Department of Chemistry and Biology, Ryerson University
Toronto ON, Canada

- Experimental design for bacterial culturing using aseptic techniques, good laboratory practices.
- Media preparation, autoclaving equipment, and working in biosafe laboratory

Apr 2016 – Aug 2016 **Summer Intern**
OxiLight Inc., Toronto ON, Canada

- Presented a pitch for a grant application on behalf of OxiLight Inc. to the Think Research Corporation

TEACHING EXPERIENCE

Sep 2017 – Apr 2019 **Graduate Teaching Assistant**
Department of Physics and Astronomy, The University of Western Ontario
London ON, Canada

- Ran the first-year physics labs and proctored exams.
- 30-40 student classes (10 hours per week)
- Gave lectures, marked student reports, and assisted incoming students in performing university level physics experiments.

Mar 2018 – Mar 2019 **Lab Demonstrator**
Department of Physics and Astronomy, The University of Western Ontario, London ON, Canada

- Performed and explained first-year physics labs to prospective high school students to The University of Western Ontario

Jan 2015 – Apr 2016 **Undergraduate Teaching Assistant**
Department of Chemistry and Biology, Ryerson University, Toronto ON, Canada

- Organized talks from professors aimed at guiding undergraduate students interested in a career in academic research.

Mar 2015 – May 2015 **Group Leader**
Student Spaceflight Experiment Program, Ryerson University, Toronto ON, Canada

- Guided high school students through the scientific process.
- Designed an experiment to be performed aboard the International Space Station.

Sep 2015 – Apr 2017 **High School Tutor**
Everest Academy, Toronto ON, Canada

- Taught grade 12 university level biology and physics based on the Ontario curriculum.
- 6-7 student classes (12 hours per week)

JOURNAL PUBLICATIONS

1. **XF Ding**, X Duan, X Chen, and N Zhu. Challenges and Techniques in Semantic Segmentation of Biological and Biomedical Materials from X-Ray Computed Microtomography. *Comput. Med. Imaging Graph.* (In Preparation)

2. X Duan, **XF Ding**, X Chen, and N Zhu. Low-dose micro-computed tomography imaging for *in vivo* visualization applications: Recent advances and future perspectives. *Invest. Radiol.* (In Preparation)
3. C Blocka, **XF Ding**, Ning Zhu, and L Zhang. Experimental Investigation of Dynamic Drying in Single Pharmaceutical Granules using Synchrotron X-ray Micro Computed Tomography. *Int. J. Pharm.* (In Preparation)
4. **XF Ding**, X Duan, N Li, Z Khoz, FX Wu, X Chen, and N Zhu. Phase Contrast Computed Tomography Enhancement Through Physics-Driven Deep Learning of Edge Enhanced and Retrieved Phase Image Features. *Med. Phys.*. (Submitted)
5. X Duan, **XF Ding**, Z Khoz, X Chen, and N Zhu. Development of A Low-Dose Strategy for Propagation-based Imaging Helical Computed Tomography (PBI-HCT): High Image Quality and Reduced Radiation Dose. *Phys. Med. Biol.* (Submitted)
6. N Li, X Duan, **XF Ding,** X Chen, and N Zhu. Characterization of hydrogel-scaffold mechanical properties and microstructure by using synchrotron propagation-based imaging. *J. Mech. Behav. Biomed. Mater.* (Submitted)
7. B Bigsby, **XF Ding**, N Zhu, D Ardenghi, R Grazziotin. Absence of dentinal microcracks following root canal shaping and obturation: a longitudinal synchrotron-imaging-based study. *Aust. Endod. J.* (Submitted)
8. X Duan, **XF Ding,** N Li, Z Khoz, FX Wu, X Chen, and N Zhu. Sparse2Noise: low-dose synchrotron X-ray tomography without high-quality reference data. *Comput. Biol. Med.* (2023). 165, 107473
9. **XF Ding,** SZ Danalou, L Zhang, and N Zhu. In situ wet pharmaceutical granulation captured using synchrotron radiation based dynamic micro-CT. *J. Synchrotron Rad.* (2023). 30, 430-439
10. X Duan, N Li, DML Cooper, **XF Ding,** X Chen, and N Zhu. Low-density tissue scaffold imaging by synchrotron radiation propagation-based imaging computed tomography with helical acquisition mode. *J. Synchrotron Rad.* (2023). 30, 417-429
11. SZ Danalou, **XF Ding,** N Zhu, HN Emady, and L Zhang. 4D Study of Liquid Binder Penetration Dynamics in Pharmaceutical Powders using Synchrotron X-ray Micro Computed Tomography. *Int. J. Pharm.* 627 (2022) 122192

CONFERENCE ABSTRACTS

1. N Zhu, L Ning, X Duan, **XF Ding**, Z Khoz, and D Chen. Non-invasive In-situ and In-vivo Characterization of Tissue Engineered Scaffolds Using Phase Contrast Based Computed Tomography. *7th TERMIS World Conference*. Seattle, WA, USA, June 2024 (Poster)
2. **XF Ding,** X Duan, N Li, D Chen, and N Zhu. SSSSeg: An Automated 3D Segmentation of Hydrogel Scaffolds Based on PBI-µCT. *2023 Canadian Light Source Annual User Meeting*. Saskatoon, SK, Canada, October 2023 (Poster)
3. SMP Andrade, **XF Ding**, L Wang, C Karunakaran, N Zhu, and HR Kutcher. Machine Learning based and Data-Driven Segmentation to Identify Fusarium-damaged Kernels in Wheat. *CPS-SK and PSSA Sixth Joint Meeting*. Saskatoon SK, Canada, October 2023 (Poster)
4. **XF Ding,** X Duan, N Li, D Chen, and N Zhu. Automatic 3D Segmentation of Hydrogel Scaffolds Based on PBI- µCT. *2023 International Conference on Biofabrication*. Saskatoon, SK, Canada, September 2023 (Oral)
5. N Li, **XF Ding,** X Duan, X Chen, and N Zhu. Characterization of mechanical properties and microstructure of hydrogel scaffolds by X-ray propagation-based imaging. *2023 International Conference on Biofabrication*. Saskatoon, SK, Canada, September 2023 (Oral)
6. X Duan, **XF Ding,** N Li, X Chen, and N Zhu. High-Accuracy Tissue Scaffolds Characterization Using Synchrotron Radiation Micro-Computed Tomography with Helical Acquisition Mode. *2023 International Conference on Biofabrication*. Saskatoon, SK, Canada, September 2023 (Poster)
7. B Bigsby, **XF Ding**, N Zhu, D Ardenghi, and R Grazziotin. Dentinal Microcracks and Endodontics: A Longitudinal Study Using Synchrotron-Computed Tomography. *2023 AADOCR/CADR Annual Meeting & Exhibition*. Portland OR, USA, March 2023 (Oral)
8. **XF Ding**, SZ Danalou, L Zhang, and N Zhu. Wet Granulation Investigated in Real-Time Using Synchrotron-Based Dynamic Microtomography. *Canadian Chemical Engineering Conference (CCEC) 2022*. Vancouver BC, Canada, October 2022 (Poster)

9. SMP Andrade, L Wang, K Najafian, L Jin, I Stavness, C Karunakaran, **XF Ding**, N Zhu, and HR Kutcher. Synchrotron-based X-ray Imaging to Identify Fusarium-damaged Kernels in Wheat. *6th Annual P2IRC Symposium*. Saskatoon SK, Canada, October 2022 (Poster)
10. SZ Danalou, **XF Ding,** N Zhu, and L Zhang. Using Synchrotron X-ray CT to Study Pharmaceutical Powders Mixing Quality and Granulation. *22nd Annual Alberta Biomedical Engineering Conference*. Banff AB, Canada, October 2021 (Poster)
11. **XF Ding,** C Li, L Zhang, and N Zhu. Sub-second and Dynamic CT Development at the Canadian Light Source. *Imaging Network Ontario 19th Annual Symposium*. Virtual Conference, March 2021 (Oral)
12. **XF Ding,** WB Handler, and BA Chronik. Modelling Static Field Induced Torque on Simplified Medical Devices. *International Society for Magnetic Resonance in Medicine 28th Annual Meeting*. Virtual Conference, August 2020 (Poster)
13. **XF Ding,** WB Handler, D Gignac, and BA Chronik. Proposed Calibration of the Torsional Spring in Torque Measurement Method Described in ASTM F2213-17. *International Society for Magnetic Resonance in Medicine 28th Annual Meeting*. Virtual Conference, August 2020 (Poster)
14. **XF Ding,** WB Handler, and BA Chronik. Modelling Static Field Induced Torque on Simplified Medical Devices. *Imaging Network Ontario 18th Annual Symposium*. Virtual Conference, March 2020 (Poster)
15. **XF Ding,** WB Handler, D Gignac, and BA Chronik. Proposed Torsional Spring Calibration in Torque Measurement Method Described in ASTM F2213-17. *Imaging Network Ontario 18th Annual Symposium*. Virtual Conference, March 2020 (Poster)
16. **XF Ding,** WB Handler, and BA Chronik. Uncertainty Analysis of Torque Measurement Methods Described in ASTM F2213-17. *International Society for Magnetic Resonance in Medicine 27th Annual Meeting*. Montreal QC, Canada, May 2019 (Poster)
17. **XF Ding,** WB Handler, and BA Chronik. Uncertainty Analysis of Torque Measurement Methods Described in ASTM F2213-17. *Imaging Network Ontario 17th Annual Symposium*. London ON, Canada, March 2019 (Poster)

HONOURS, AWARDS, and FELLOWSHIPS

2023	**First Prize in the Poster Competition** from the 2023 CLS Annual Users' Meeting ($500 CAD)
2023 – Present	**BIOE Devolved Graduate Scholarship** from the University of Saskatchewan ($10,500 CAD per annum)
2023 – Present	**Graduate Fellow** of NSERC CREATE to INSPIRE ($10,500 CAD per annum)
2022	**Engineering Travel Award** from the College of Engineering ($300 CAD)
2022	**Best Poster Presentation** at the 2022 Canadian Chemical Engineering Conference
2022	**USask Student Travel Award** from the University of Saskatchewan ($350 CAD)
2019, 2020	**Educational Stipend** from the International Society for Magnetic Resonance in Medicine ($1,535 USD two times)
2017 – 2019	**Western Graduate Research Scholarship** from The University of Western Ontario ($4,500 CAD per annum)
2014 – 2017	**Dean's Honour List** from Ryerson University (no monetary value)

ORGANIZATIONS and SOCIETIES

2023 – Present	**Student Member** of the International Society for Biofabrication
2022 – 2023	**Student Member** of the Canadian Society for Chemical Engineering
2020 – Present	**Student Member** of the Canadian Medical and Biological Engineering Society
2018 – 2020	**Trainee Member** of the International Society for Magnetic Resonance in Medicine