

## 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	<b>PhD Biomedical Engineering</b> , University of Saskatchewan
2017 – 2019	<b>MSc Medical Biophysics</b> , The University of Western Ontario
2013 – 2017	<b>BSc Hons Biology</b> , Ryerson University

### PROFESSIONAL EXPERIENCE

Dec 2021 – Present	<b>Visiting Worker</b> Canadian Light Source Inc., Saskatoon SK, Canada <ul style="list-style-type: none"><li>Developed image processing and post-processing analysis methods using synchrotron radiation.</li><li>Experienced using tensorflow to develop machine learning applications for image segmentation.</li><li>Large data handling and high-performance computing.</li></ul>
Sep 2020 – Present	<b>Graduate Research Assistant</b> Division of Biomedical Engineering, University of Saskatchewan, Saskatoon SK, Canada <ul style="list-style-type: none"><li>Biocompatible staining using gold nanoparticles for hydrogel scaffolds from natural polymers e.g., gelatin and alginate.</li><li>Trained in rat handling, surgery, post-op monitoring, and euthanasia.</li></ul>
Mar 2019	<b>Conference Organising Volunteer</b> Lawson Health Research Institute, London ON, Canada <ul style="list-style-type: none"><li>On-site promotion of the use of the mobile phone application for London Health Research Day.</li></ul>
Sep 2017 – Aug 2019	<b>Graduate Research Assistant</b> The xMR Labs, The University of Western Ontario, London ON, Canada <ul style="list-style-type: none"><li>Numerical modeling of magnetic materials and the electromagnetic field created by an MR scanner.</li></ul>

## CURRICULUM VITAE

- 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)

## CURRICULUM VITAE

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. N Li, **XF Ding**, X Duan, X Chen, and N Zhu. Development of Mechanical Characterization Method of Hydrogel Scaffolds Using Synchrotron Propagation-Based Imaging. *Int. J. Bioprinting* (In Preparation)
4. **XF Ding**, X Duan, N Li, S Khoz, X Chen, and N Zhu. Efficient Segmentation of Low-Density Materials Using Physics-Driven Deep Learning of Enhanced Edge and Retrieved Phase Image Features. *J. Med. Imaging.* (In Preparation)
5. 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. *J. Endod.* (Submitted)
6. X Duan, **XF Ding**, N Li, 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
7. **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
8. 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
9. 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. **XF Ding**, X Duan, N Li, D Chen, and N Zhu. SSSSeg: An Automated 3D Segmentation of Hydrogel Scaffolds Based on PBI- $\mu$ CT. *2023 Canadian Light Source Annual User Meeting*. Saskatoon, SK, Canada, October 2023 (Poster)
2. 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)
3. **XF Ding**, X Duan, N Li, D Chen, and N Zhu. Automatic 3D Segmentation of Hydrogel Scaffolds Based on PBI-  $\mu$ CT. *2023 International Conference on Biofabrication*. Saskatoon, SK, Canada, September 2023 (Oral)
4. 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)
5. 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)
6. 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)
7. **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)
8. 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)
9. 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)
10. **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)
11. **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)

## CURRICULUM VITAE

12. **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)
13. **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)
14. **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)
15. **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)
16. **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	<b>First Prize in the Poster Competition</b> from the 2023 CLS Annual Users' Meeting (\$500 CAD)
2023 – Present	<b>BIOE Devolved Graduate Scholarship</b> from the University of Saskatchewan (\$10,500 CAD per annum)
2023 – Present	<b>Graduate Fellow</b> of NSERC CREATE to INSPIRE (\$10,500 CAD per annum)
2022	<b>Engineering Travel Award</b> from the College of Engineering (\$300 CAD)
2022	<b>Best Poster Presentation</b> at the 2022 Canadian Chemical Engineering Conference
2022	<b>USask Student Travel Award</b> from the University of Saskatchewan (\$350 CAD)
2019, 2020	<b>Educational Stipend</b> from the International Society for Magnetic Resonance in Medicine (\$1,535 USD two times)
2017 – 2019	<b>Western Graduate Research Scholarship</b> from The University of Western Ontario (\$4,500 CAD per annum)
2014 – 2017	<b>Dean's Honour List</b> from Ryerson University (no monetary value)

## ORGANIZATIONS and SOCIETIES

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