

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	Contractor Canadian Light Source Inc., Saskatoon SK, Canada <ul style="list-style-type: none">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 <ul style="list-style-type: none">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 Organizing Volunteer Lawson Health Research Institute, London ON, Canada <ul style="list-style-type: none">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 <ul style="list-style-type: none">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

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- Sep 2016 – **Undergraduate Research Assistant**
Apr 2017 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 – **Summer Intern**
Aug 2016 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 – **Graduate Teaching Assistant**
Apr 2019 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 – **Lab Demonstrator**
Mar 2019 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 – **Undergraduate Teaching Assistant**
Apr 2016 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 – **Group Leader**
May 2015 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 – **High School Tutor**
Apr 2017 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. **XF Ding**, X Duan, X Chen, and N Zhu. Towards Non-Destructive and Longitudinal Evaluation of Hydrogel Scaffolds in Live Animals Using Synchrotron-Based Imaging Techniques. *Biofabrication.* (In Preparation)
4. 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.* (In Preparation)

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5. X Duan, **XF Ding**, Z Khoz, X Chen, and N Zhu. Development of A Deep Learning-based Algorithm for High-Pitch Helical Computed Tomography Imaging. *Expert Syst. Appl.* (Submitted)
6. 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.* (Submitted)
7. 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. *Biomed. Phys. Eng. Expr.* (Submitted)
8. **XF Ding**, X Duan, N Li, Z Khoz, FX Wu, X Chen, and N Zhu. Development of a Physics-Driven Deep Learning Method for Phase Retrieval Image Enhancement in Phase Contrast Computed Tomography Segmentation Applications. *Med. Phys.* (Submitted)
9. 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)
10. 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
11. **XF Ding**, SZ Danalou, L Zhang, and N Zhu. In situ wet pharmaceutical granulation captured using synchrotron radiation dynamic micro-CT. *J. Synchrotron Rad.* (2023). 30, 430-439
12. 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
13. 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- μ CT. *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- μ CT. *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)

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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