

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

CURRICULUM VITAE

- 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. Application of Synchrotron Radiation Towards In Vivo and Ex Vivo Hydrogel Scaffold Characterization. *Biofabrication*. (In Preparation)
2. **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)
3. 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)
4. 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)

CURRICULUM VITAE

5. **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)
6. 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. *IEEE Trans. Biomed. Eng.* (Submitted)
7. 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)
8. 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)
9. 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
10. **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
11. 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
12. 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)
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)

CURRICULUM VITAE

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