Zechen Xu (He/Him/His)

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EDUCATION

Johns Hopkins University Baltimore, MD
Master of Science in Biomedical Engineering 08/2023 - 05/2025 (expected)
GPA: 3.6/4
Focus area: Medical Imaging (MRI) & Computer Integrated Surgery

Guangdong Technion – Israel Institute of Technology (GTIIT) Shantou, China
Bachelor of Science in Materials Sci. & Eng., ***Cum Laude*** 08/2019 - 07/2023
GPA: 3.8/4 (90.4/100)
Honors: Dean's List (2020-2022); Academic Excellence Scholarship (2020-2022)
English-medium Education; Dual degree from GTIIT and Technion-Israel Institute of Technology

RESEARCH INTERESTS

Medical Image Analysis & Processing, Computer Vision, Augmented Reality, Quantitative MRI

PUBLICATIONS

Zechen Xu*, Dan Zhu*, and Qin Qin. Ultrafast blood T_1 measurement at the internal jugular vein using Golden Angle rotated Spiral k-t Sparse Parallel imaging (GASSP), **ISMRM 2025 Annual Meeting**, (submitted)

RESEARCH EXPERIENCE

Development and Validation of Quantitative MRI & Imaging Reconstruction Baltimore, MD
Research Assistant | Supervisor: Dr. Qin Qin 01/2024 - Ongoing

- Developed and validated an ultrafast method for measuring blood T_1 in the human jugular vein at 3 Tesla using Golden Angle rotated Spiral k-t Sparse Parallel imaging (GASSP) sequence within 10 seconds
- Developed an algorithm for automatic vessel detection and slice positioning, enabling precise quantification of global cerebral blood flow
- Skilled in operating MRI equipment with different protocols and performing scans on multiple subjects

Optimizing Microwave Properties of dielectric ceramics via Computational Simulation Shantou, China
Research Assistant | Supervisor: Dr. Daniel Q. Tan 11/2021 - 05/2023

- Led a team of three to research on the material fabrication processes and characterization of high-quality factor microwave dielectric ceramics
- Innovated a core@shell structure for the Al_2O_3@TiO_2 ceramics using the Atomic Layer Deposition (ALD) technique
- Developed molecular dynamics (MD) simulations to model the diffusion paths of molecules during the sintering process under varying temperatures and durations
- Located the most suitable temperature and duration to form a structure with the most desired microwave dielectric property of Al_2O_3@TiO_2

PROJECTS

Augmented Reality-Enhanced Surgical Microscopes for Orthopaedic Spinal Procedures Baltimore, MD
Research Assistant | Supervisor: Dr. Alejandro Martin-Gomez & Dr. Russell Taylor 01/2024 - 06/2024

- Designed and developed an Augmented Reality (AR) system for real-time 3D anatomical visualization, improving precision in Minimally Invasive Spinal Surgery
- Implemented real-time anatomy tracking and digital twin registration using the NDI tracking system
- Successfully overlaid 3D anatomical structures from CT images and integrated AR functionality using a Unity plugin for real-time pose estimation and marker-based detection with OpenCV

LEADERSHIP

GTIIT, Model United Nations Shantou, China
General Secretary 09/2020 - 05/2023

- Elected as the general secretary in Sep 2021 to lead MUN training, recruitment, administration and operation
- Grow MUN to 30 members and deliver public speaking and debating training to members on a regular basis
- Led a group of eight to attend the East Asian Model United Nations conference held by the University of Macau in April 2021

SKILLS & HOBBIES

- **Programming:** MATLAB, Python, C#, Linux, LaTeX
- **Software/Tools:** SolidWorks, CAD, Unity, Blender, 3D Slicer, MIPAV
- **Language:** English (proficient), Mandarin (native)
- **Hobbies:** Photography, Clarinet Performance