

NEJAT CAN

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EDUCATION

Ph.D. in Electrical Engineering, University of Southern California Aug 2022 – present

- *Research Areas*: Signal Processing, Machine Learning, Magnetic Resonance Imaging
- *Courses*: Optimization, Inverse Problems, Machine Learning, Digital Signal Processing

B.S. in Biomedical Engineering, University of Rochester Aug 2018 – May 2022

- *Honors and Scholarships*: Rosenberger Prize, International Baccalaureate Scholarship, Dean's List

Areas of interest: Video and Image Processing, Self-supervised Learning, Inverse Problems

EXPERIENCE

University of Southern California Aug 2022 – present
Research Assistant *Los Angeles, CA*

- Designed a physics-informed constrained image reconstruction algorithm for dynamic MRI, achieving significant de-blurring of fine structures by optimizing a **spatial-temporal regularized** cost function using **nonlinear conjugate gradient descent**. Leveraged singular value decomposition (SVD) for computational efficiency via **low-rank approximation**. [Can, NY, . . . , Nayak, KN. \(2024\). ISMRM Annual Meeting 2024.](#)
- Developed a self-supervised VarNet for real-time 3D MRI reconstruction leveraging **ground-truth free learning** via [Noise2noise](#) to enable robust training with limited data. Implemented iterative **physics-informed optimization** with learnable refinement modules. Achieved high-accuracy **end-to-end** image reconstruction directly from undersampled k-space data. Developed in **PyTorch**.

Massachusetts Institute of Technology May 2021 – Nov 2021
Research Intern *Boston, MA*

- Designed a self-supervised **4D CNN** for **low-latency** diffusion tensor imaging, leveraging residual learning to enable a deep neural network architecture and mitigate the vanishing gradient problem. Applied **physics-based constraints** to improve model accuracy. Maximized model performance by performing ablation studies and optimized hyperparameters via parameter sweeps. **Outperformed** the non-DL-based method by improving the reconstruction time by a **factor of 17.5x**, while maintaining high-fidelity with an **SSIM of 0.96**. Developed in **TensorFlow**. [Can, NY, Tian, Q, Bilgic, B. \(2021\). ISMRM DSG 2021.](#)

University of Rochester Medical Center Apr 2019 – May 2021
Research Assistant *Rochester, NY*

- Prototyped a strain-gauge equipped surgical device. Drew scientific conclusions from acquired data, contributing to **4 academic publications**. [Kotelsky, A, . . . , Can, NY, et al. \(2021\). Osteoarthritis and Cartilage.](#)

LEADERSHIP

Teaching Assistant, University of Rochester, University of Southern California Aug 2020 – present

- Served as a TA for 10 courses, directly supporting and engaging with >1,000 students over several years

President of Girls Who Code, University of Rochester Oct 2021 – May 2022

- Led local efforts to reduce the gender gap in computer science, introducing over 100 girls to programming.

SKILLS

Programming Languages	Python, MATLAB, C/C++, Julia, Git, bash
Libraries and Software	PyTorch, TensorFlow, SigPy, OpenCV, L ^A T _E X
Communication Skills	Competed in World Debate Championships; Native speaker of English & Turkish