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*: Convex & Non-convex 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, Autonomous Vehicles, 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 **non-linear conjugate gradient descent**. Utilized **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 accelerated MRI reconstruction leveraging **ground-truth free learning** via Noise2noise to enable robust training with limited data. Utilized 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 3D CNN for rapid diffusion tensor imaging, incorporating **residual learning**, instance normalization, and ReLU activations for efficient feature extraction & stable training. Applied **physics-based constraints** to improve model accuracy. Maximized model performance by **optimizing hyperparameters**, including a custom implementation of a **learning rate scheduler**. Outperformed non-DL based method through an improvement in 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 2021 – 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, LaTeX
Communication Skills	Competed in World Debate Championships; Native speaker of English & Turkish