Nikola Janjušević

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Research Statement

I am interested in **imaging inverse-problems** and **Deep Neural Networks (DNNs)**.

I have focused my Ph.D on the **interpretable-construction of DNNs** and leveraging this understanding to achieve robustness to changes in observation noise-level. **I believe principled construction leads to better performance and novel capabilities.**

I have worked with different modalities (accelerated MRI, RAW image DeMosaicing) and different noise distributions (Poisson, salt-and-pepper, AWGN), in both **supervised and unsupervised learning** settings.

Work Experience

Apple Video Engineering, Research Intern
"White-box" reference-guided image enhancement.
Summer 2022, Cupertino, CA

Samsung Research America, Research Intern
Survey of fast novel-view synthesis methods for video involving with comparisons on in-house data.
Summer 2021, Plano, TX (remote)

Teaching Experience

The Cooper Union, Adjunct Professor
ECE-150 Digital Logic Design.
Fall 2022, New York, NY

NYU Tandon, Teacher's Assistant
ECE-GY 6123 Image and Video Processing.
Spring 2022, Brooklyn, NY

NYU Summer STEM, Senior Instructor
Introduction to Machine Learning.
Summer 2019, Brooklyn, NY

Awards and Honors

Telephonics Research Fellowship 2020-2022
NYU K-12 STEM Fellowship 2019
Radio Club of America Scholarship 2019
CU Half-Tuition Scholarship 2015-2019
CU Innovator's Merit Scholarship 2015-2019

Education

New York University
Ph.D Electrical Engineering, GPA: 3.9/4.0
Advisor: Professor Yao Wang, NYU Video Lab
Fall 2019 - Present, Brooklyn, NY

The Cooper Union
Bachelors of Engineering, Electrical Engineering
Magna Cum Laude
Minor in Computer Science
Fall 2015 - Spring 2019, New York, NY

Selected Graduate Courses:
Math-GA 20(10,20) Numerical Methods I, II
Math-GA 2012 Non-smooth and Convex Optimization
ECE-GY 6813 Medical Imaging

Selected Skills: Julia (Lux, CUDA), Matlab, Bash
Python (PyTorch, NumPy), LaTeX(PGFplots, TikZ)

Publications

[1] N. Janjušević, A. Khalilian-Gourtani and Y. Wang, *CDLNet: Noise-Adaptive Convolutional Dictionary Learning Network for Blind Denoising and Demosaicing*, IEEE OJSP 2022

[2] N. Janjušević, A. Khalilian-Gourtani and Y. Wang, *Gabor is Enough: Interpretable Deep Denoising with a Gabor Synthesis Dictionary Prior*, IEEE IVMSP 2022.

Last updated: December 11th 2022