

SEMIH BARUTCU

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PROFILE

Ph.D. candidate at Northwestern University with a focus in algorithm development for inverse problems, deep learning, and computer vision. Seeking graduate internship opportunities in artificial intelligence, data science and image processing fields.

EDUCATION

Ph.D. Electrical Engineering and Computer Science
Northwestern University, Class of 2022, GPA=3.98/4.00
(Katsaggelos Image & Video Processing Lab)

B.Sc. Electrical Engineering, *summa cum laude*
Bogazici University Istanbul, Class of 2017, GPA=3.80/4.00
(Minor in Business Administration and Management)

M.Sc. Electrical Engineering and Computer Science
Northwestern University, Class of 2018, GPA=3.98/4.00

(Full Scholarship) Exchange in Electrical & Computer Eng.
University of Texas at Austin, Class of 2017, GPA=3.84/4.00

TECHNICAL SKILLS

• Python	• PyTorch	• Keras	• C/C++	• Scikit-learn	• Pandas
• MATLAB	• TensorFlow	• Java	• OOP	• Electronic Design	• Numpy/Scipy

EXPERIENCE

Image Processing Research Assistant

Northwestern University – Katsaggelos’ Image and Video Processing Laboratory

Sept 2017 – Present
Evanston, IL

- Developing techniques for computational microscopic imaging methods, combining x-ray ptychography and computational tomography.
- Building neural networks for detection of Covid-19 and Cardiac Amyloidosis from chest x-rays.
- Exploring machine learning solutions to problems in computer vision and biomedical imaging

Computational Science Intern

Argonne National Laboratory – The Advanced Photon Source

June – August 2018
Lemont, IL

- Developing and implementing an iterative algorithm on direct coupling of computational tomography and x-ray ptychography

Mobile Application Developer

Valensas Mobile Technologies

March – Sept 2017
Istanbul, TR

- Developing Android applications for multiple banks and companies

R&D Engineering Intern

Mercedes – Benz Turk

August – Sept 2016
Istanbul, TR

- Simulating and testing effects of electrical motor on vehicle performance

Software Engineering Intern

Aselsan Defense Industry Inc

June – July 2016
Ankara, TR

- Application virtualization for computer programs specific to the industry

Digital Design Engineering Intern

Meteksan Defense Industry Inc

June – July 2015
Ankara, TR

- Designing a PCB to be used as a Video DAC and driving it using HDL

SELECTED PUBLICATIONS

- **S. Barutcu**, P. Ruiz, F. Schiffers, S. Aslan, D. Gursoy, O. Cossairt, A. Katsaggelos. (2020). “Simultaneous 3D X-Ray Ptycho-Tomography with Gradient Descent”. *International Conference on Image Processing (In Review)*.
- P. Shedligeri, **S. Barutcu**, P. Ruiz, F. Schiffers, A. Katsaggelos, O. Cossairt. (2020). “Improving Acquisition Speed of X-Ray Ptychography through Spatial Undersampling and Regularization.” *German Conf. on Pattern Recog. (In Review)*.
- **S. Barutcu**, L. Arslan. (2017). “Topic Classification Using Bidirectional LSTM Neural Networks.” *Bogazici University Undergraduate Thesis*. Print.