

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 and Deep Learning Research Assistant Sept 2017 – Present
Northwestern University – Katsaggelos' Image and Video Processing Laboratory Evanston, IL

- Developing techniques for computational microscopic imaging methods, combining x-ray ptychography, computational tomography, and laminography
- 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 / Senior Computational Science Intern June – Sept 2020
Argonne National Laboratory – The Advanced Photon Source & June – August 2018
Lemont, IL

- Creating GANs for elimination of missing wedge problem in inverse tomography and laminography
- Developing and implementing an iterative algorithm on direct coupling of computational tomography and x-ray ptychography

Mobile Application Developer March – Sept 2017
Valensas Mobile Technologies Istanbul, TR

- Developing Android applications for multiple banks and companies

R&D Engineering Intern August – Sept 2016
Mercedes – Benz Turk Istanbul, TR

- Simulating and testing effects of electrical motor on vehicle performance

Software Engineering Intern June – July 2016
Aselsan Defense Industry Inc Ankara, TR

- Application virtualization for computer programs specific to the industry

Digital Design Engineering Intern June – July 2015
Meteksan Defense Industry Inc Ankara, TR

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

SELECTED PUBLICATIONS

- **S. Barutcu**, P. Ruiz, F. Schiffrers, S. Aslan, D. Gursoy, O. Cossairt, A. Katsaggelos (2020). “Simultaneous 3D X-Ray Ptycho-Tomography with Gradient Descent”. *International Conference on Image Processing*.
- R. Wehbe, **S. Barutcu**, A. Katsaggelos, *et. al.* (2020). “DeepCOVID-XR: An Artificial Intelligence Algorithm to Detect COVID-19 on Chest X-rays Trained and Tested on a Large US Clinical Dataset.” *Radiology Journal (Accepted)*.
- P. Shedligeri, **S. Barutcu**, F. Schiffrers, P. Ruiz, A. Katsaggelos, O. Cossairt (2020). “Improving Acquisition Speed of X-Ray Ptychography through Spatial Undersampling and Regularization.” *German Conf. on Pattern Recognition*.
- **S. Barutcu**, L. Arslan. (2017). “Topic Classification Using Bidirectional LSTM Neural Networks.” *Bogazici University Undergraduate Thesis*. Print.