SEMIH BARUTCU

semihbarutcu@u.northwestern.edu   sbarutcu.github.io

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

Scripting Languages: Python, MATLAB, Java, C / C++, Bash, Verilog, SQL, LaTeX
Tools/Libraries: PyTorch, TensorFlow, Keras, Scikit-Learn, Pandas, Numpy/Scipy, Matplotlib

EXPERIENCE

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

PhD Software Engineering Intern   *June – Sept 2021*
Uber   *San Francisco, CA*
- Optimize near-real time streaming pipelines for business critical ML Features and metrics.
- Onboard micro-services to tracing platform, and implement error categorization together with exception types for improving debuggability.

Computational Science Intern / Senior Computational Science Intern   *June – Sept 2020*
Argonne National Laboratory – The Advanced Photon Source   *& June – August 2018*
- Creating GANs for elimination of missing wedge problem in inverse tomography and laminography.   *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*

R&D Engineering Intern - *Mercedes – Benz Turk*   *August – Sept 2016*

Software Engineering Intern - *Aselsan Defense Industry Inc*   *June – July 2016*

Digital Design Engineering Intern - *Meteksan Defense Industry Inc*   *June – July 2015*

SELECTED PUBLICATIONS

- **S. Barutcu** *et al*. (2021). "Limited-Angle CT with Deep Image and Physics Priors". *Nature - Scientific Reports.*
- **S. Barutcu** *et al*. (2020). "Simultaneous 3D X-Ray Ptycho-Tomography with Gradient Descent". *Proceedings of International Conference on Image Processing (ICIP).*
- R. M. Wehbe**, S. Barutcu** *et al*. (2020). "DeepCOVID-XR: An Artificial Intelligence Algorithm to Detect COVID-19 on Chest Radiographs Trained and Tested on a Large US Clinical Dataset". *Radiology.*
- P. Shedligeri, **S. Barutcu** *et al*. (2021). "Improving Acquisition Speed of X-Ray Ptychography through Spatial Undersampling and Regularization." *Proceedings of International Conference on Image Processing (ICIP).*
- **S. Barutcu** *et al*. (2021). "Reconstructions of X-Ray Ptychography with Deep Generative and Image Priors using GANs". *Nature - Scientific Reports.*
- **S. Barutcu**, L. Arslan. (2017). "Topic Classification Using Bidirectional LSTM Neural Networks." *Bogazici University Undergraduate Thesis*. Print.