# Yuyang Hu


Email: h.yuyang@wustl.edu
Phone: (+1)314-309-9631
Address: 840 Longacre Dr, Apt A,
St. Louis, MO


## BIOGRAPHY

I am a **incoming Ph.D.** student at the Department of Electrical and System Engineering, **Washington University in St. Louis (Wash U)**, working under the supervision of **Dr. Ulugbek Kamilov**. My research goal is to develop fast, efficient, and interpretable algorithms for solving large-scale imaging problems. My recent work is focusing on parallel MRI reconstruction and large-scale optimization.

**Research Interests:** Computational Imaging, Parallel MRI, Optimization, Deep Learning

## EDUCATION

**Washington University in St. Louis, St. Louis, MO** Aug. 2022 – Expected 2026
Ph.D. student in Electrical Engineering

**Washington University in St. Louis, St. Louis, MO** Aug. 2020 – May 2022
M.S. in Electrical Engineering GPA: 4.0/4.0
Advisor: Prof. Ulugbek Kamilov

**Nanjing Tech University, Nanjing, China** Sep. 2016 – Jun. 2020
B.S. in Electronic and Information Engineering GPA: 3.79/4.0
Advisor: Prof. Yaping Bao

**Soochow University, Suzhou, China** Jun. 2019 – Sep. 2019
Summer Research Assistant
Advisor: Prof. Xinjian Chen

## AWARDS

- WUSTL Dean's Select PhD Fellowship, 2021
- NJTECH U Outstanding Graduate (top 2%), 2020
- NJTECH U First-Class Scholarship (top 5%), 2016-2017, 2017-2018, 2018-2019

## RESEARCH EXPERIENCE

- **Reconstruction for Parallel Image Without Groundtruth (WashU CIG)**
  - Used deep learning for joint parallel image reconstruction and coil sensitivity calibration without using the ground-truth images [1].
- **ASYNC Regularization by Denoising (RED) with unbounded delay (WashU CIG)**
  - Proposed asynchronous parallel settings (with unbounded delay) where a cluster of processors is considered, which simultaneously implements stochastic gradients and block-coordinate decomposition to image recovery tasks.

- **Monotonically Convergent Regularization by Denoising (WashU CIG)**
  - Proposed a new monotone RED (MRED) algorithm [b 2.] that can offer stable convergence for nonconvex data-fidelity terms and expansive deep image denoisers. MRED is the first RED method which is guaranteed to converge for any denoiser—irrespective of its expansiveness.

## PUBLICATIONS

**Pre-print:** (*'∗' indicates equal contribution*)

[1] S. Shoushtari, J. Liu, **Y. Hu**, and U. S. Kamilov, "Deep Model-Based Architectures for Inverse Problems under Mismatched Priors." arxiv:2207.13200, preprint, 2022

**Published:** (*'∗' indicates equal contribution*)

[b 2.] **Y. Hu**, J. Liu, X. Xu, and U. S. Kamilov, "Monotonically Convergent Regularization by Denoising." **Proc. IEEE Int. Conf. Image Proc. (ICIP 2022) (Bordeaux, France, October 16-19)**, in press.

[b 1.] **Y. Hu***, W. Gan*, C. Eldeniz, J. Liu, Y. Chen, H. An, and U. S. Kamilov, "SS-JIRCS: Self-Supervised Joint Image Reconstruction and Coil Sensitivity Calibration in Parallel MRI without Ground Truth," **Proc. IEEE Int. Conf. Comp. Vis. Workshops (ICCVW 2021)(Oct 11-17)**, pp. 4048-4056.

## TEACHING SERVICE

**As Course Grader:**

- ESE 417 Introduction to Machine Learning and Pattern Classification, Wash U. 2021 Fall.
- ESE 415 Optimization, Wash U. 2022 Spring.