IEEE Transactions on Medical Imaging
Special Issue Call for Papers on
Machine Learning for Image Reconstruction

Machine learning and data-driven methods represent a paradigm shift, and they are bound to have a transformative impact in the area of medical imaging, not only on image analysis and pattern recognition but also on image reconstruction. This special issue is dedicated to the latter aspect. Recently, deep learning techniques are being actively explored for image reconstruction and other inverse problems by multiple groups worldwide, with encouraging results and increasing interest. Coincidentally, this year is the centenary of the Radon transform, which is a mathematical foundation for tomography. It seems appropriate and timely to consider how to invert the Radon transform and Fourier transform via machine learning, and have this special issue serve as a forum to reflect this emerging trend of image reconstruction research. In this respect, it will frame a fresh new way to recharge or redefine the reconstruction algorithms with extensive prior knowledge for superior diagnostic performance.

Since machine learning for image reconstruction is a new area, we are open to innovative ideas and significant results in the spirit of artificial intelligence especially learning from data. A strong evaluation component is required to compare quantitatively the images reconstructed via machine learning and traditional methods in a systematic and reproducible fashion. To foster reproducibility, authors are required to make their trained codes and a few synthetic or real datasets used in this issue publicly available for at least two years after the formal publication; e.g., using https://codeocean.com/ieee/signup. The topics include but are not limited to:

- X-ray CT image reconstruction (such as for low-dose imaging)
- MRI image reconstruction (such as for fast imaging)
- SPECT and PET image reconstruction
- Ultrasound and optical imaging
- Multimodality fusion or joint image reconstruction across two or more modalities

Authors must submit papers digitally according to https://ieee-tmi.org/authors/submit-a-manuscript.asp. Please state that the submission is for this special issue in the cover letter. Authors are encouraged to discuss with one of the Guest Editors to determine suitability for this special issue, or check the perspective article http://ieeexplore.ieee.org/document/7733110 (*Ge Wang, Perspective on Deep Imaging, IEEE Access, Nov. 3, 2016*) for a rough idea.

Guest Editors:

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Schedule:

Submission of manuscripts: Sept. 1, 2017
Acceptance/rejection notification: Nov. 1, 2017
Revised manuscripts due: Jan. 1, 2018
Final acceptance: Feb. 1, 2018
Publication: March 1, 2018 (Tentatively)