WENCHAO CAO

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EDUCATION

Ph.D. in Lab of Prof. Wim Dewulf Dec. 2014 - Exp. May 2019
Katholieke Universiteit Leuven
Dissertation: Comparison and Development of Multi-material Beam Hardening Correction Algorithms for Industrial 3D-CT Dimensional Metrology

M.S. in Biomedical Engineering Sep. 2011 - Aug. 2014
University of Cincinnati

B.E. in Biomedical Engineering Sep. 2007 - Jun. 2011
Hebei University of Science & Technology

FUNDING

Research Foundation Flanders - Strategic Basic Research Feb. 2018 - Feb. 2019

EU Marie Curie Initial Training Networks action Dec. 2014 - Dec. 2017

MAJOR RESEARCH EXPERIENCE

KU Leuven Dec. 2014 - Present
PhD Researcher *Leuven, Belgium*

· Develops, implements, and validates machine learning based CT image processing algorithms with MATLAB and Python
· Implements and improves the state-of-the-art CT artifact reduction algorithms with MATLAB and Python
· Conducts mathematical modeling and simulation of CT imaging with MATLAB and C++
· Acquires and analyzes (*e.g.* segmentation, rendering, classification, *etc.*) experimental data from laboratory CT instruments

University of Cincinnati Sep. 2012 - Feb. 2014
Master Thesis /Project *Cincinnati, USA*

· Established an innovative algorithm to map the functional networks in the human brain with MATLAB and R
· Managed data processing among various software platforms

Vontz Center for Molecular Studies Sep. 2011 - Aug. 2012
Research Assistant *Cincinnati, USA*

· Planned experimental protocols for the in vitro cancer treatment with SapC protein
· Maintained laboratory space and supplies

PUBLICATIONS

Published

Cao W., Sun, T., G., Fardell, G., Price, B., Dewulf, W. "Comparative performance assessment of beam hardening correction algorithms applied on simulated data sets." Journal of microscopy 272.3 (2018): 229-241.

Cao W., Sun, T., Kerckhofs, G., Fardell, G., Price, B., Dewulf, W. "A simulation based study on the influence of the x-ray spectrum on the performance of multi-material beam hardening correction algorithms." Measurement Science and Technology (2018).

Submitted

Cao W., Fardell G., Price B., Dewulf W. "An improved segmentation method for multi-material beam hardening correction in industrial X-ray computed tomography"

Cao W., Pauwels R., Fardell G., Price B., Dewulf W. "A pseudo-monochromatic image synthesis method for multi-material beam hardening correction in industrial CT"

Cao W., Pauwels R., Fardell G., Price B., Dewulf W. "Efficient scattering correction for X-ray spectral estimation in industrial cone-beam CT"

SELECTED PRESENTATIONS

Cao W., Pauwels R., Fardell G., Price B., Dewulf W. "Evaluation of the uncertainties in X-ray spectral estimation using transmission measurements" 9th Conference on Industrial Computed Tomography, Padua, Italy (iCT 2019).

Pauwels R., **Cao W.**, Wang B., Xiao Y., Dewulf W. "Exploratory research into reduction of scatter and beam hardening in industrial computed tomography using convolutional neural networks" 9th Conference on Industrial Computed Tomography, Padua, Italy (iCT 2019).

Cao W., Fardell G., Price B., Dewulf W. "Simulation based study on the influence of deviations between the assumed and actual X-ray spectra on the performance of the Alvarez dual-energy method for beam-hardening correction" 8th Conference on Industrial Computed Tomography, Wels, Austria (iCT 2018).

Cao W., Sun T., Fardell G., Price B., Dewulf W. "Comparative performance assessment of beam hardening correction algorithms applied on simulated datasets", 5th annual Tomography for Scientific Advancement (ToScA) symposium, Portsmouth, UK (ToScA 2017).

Cao W., Fardell G., Price B., Dewulf W. "A framework for performance assessment of beam hardening correction algorithms in industrial computed tomography", 7th Conference on Industrial Computed Tomography, Leuven, Belgium (iCT 2017).

SKILLS

Programming: MATLAB, R, Python
Software: MS Office Suite, LaTeX, ImageJ, Volume Graphics, aRTist