

Dong Hye Ye

CONTACT INFORMATION	Marquette University Department of Electrical and Computer Engineering Olins 505, 1515 W. Wisconsin Ave. Milwaukee, WI 53233 USA	<i>Phone:</i> +1-215-880-7843 <i>E-mail:</i> donghye.ye@marquette.edu <i>Homepage:</i> https://sites.google.com/site/yedonghye/
PERSONAL INFORMATION	Nationality: South Korea Immigration Status: United States Permanent Resident (Green Card Holder)	
RESEARCH INTERESTS	Image Processing, Machine Learning, CT Reconstruction, Metal Artifact Reduction, Medical Image Analysis, Electron Microscopy, Automatic Target Recognition, Moving Object Detection	
CURRENT ACADEMIC APPOINTMENT	Assistant Professor , Marquette University Department of Electrical and Computer Engineering Research Assistant Professor , Purdue University School of Electrical and Computer Engineering	August 2018 to present August 2017 to present (on leave)
	<ul style="list-style-type: none">• Lead advanced research and mentor graduate students with extramural fundings<ul style="list-style-type: none">– Build an Automatic Target Recognition (ATR) system for CT-based baggage screening with Metal Artifact Reduction (MAR)– Improve speed of model based iterative reconstruction (MBIR) in GE Revolution CT system using deep learning– Develop a sparse sampling method for high-throughput microscopic imaging (e.g., Raman spectroscopy) using supervised learning– Design moving object detection and tracking algorithms for light-weight vision-based collision avoidance system in Unmanned Aerial Vehicles (e.g., Drone)	
PREVIOUS EXPERIENCES	Research Scientist , Purdue University Postdoctoral Scholar , Purdue University School of Electrical and Computer Engineering	September 2015 to August 2017 October 2013 to August 2015
	<ul style="list-style-type: none">• Supervisor: Professor Charles Bouman<ul style="list-style-type: none">– Accelerate MBIR of truncated projection data using optimal initial condition– Improve convergence speed of MBIR using dictionary learning– Develop a dynamic sparse sampling method for X-ray crystallography to reduce the X-ray damage on bio-specimen– Develop a CT-based object detection algorithm for checked baggage screening	
	Research Intern , Microsoft Research in Cambridge	July 2012 to September 2012
	<ul style="list-style-type: none">• Supervisor: Dr. Antonio Criminisi<ul style="list-style-type: none">– Develop a database approach for synthesis of patient-specific scans of unavailable imaging modality	
EDUCATION	University of Pennsylvania , Philadelphia, PA Ph.D., Bioengineering, August 2013	
	<ul style="list-style-type: none">• Adviser: Professor Christos Davatzikos, Professor Kilian Pohl<ul style="list-style-type: none">– Develop a large deformation registration framework based on manifold learning– Create an MRI-based computer aided diagnosis system for Alzheimer’s disease and Tetralogy of Fallot using machine learning	
	Georgia Institute of Technology , Atlanta, GA M.S., Electrical and Computer Engineering, May 2008	
	Seoul National University , Seoul, South Korea B.S., Electrical and Computer Engineering, February 2007	

AWARDS

- **Purdue Research Foundation International Travel Grant:** 2018 International Conference on Acoustics, Speech and Signal Processing (ICASSP)
- **Best Paper Award:** 2018 International Symposium on Electronic Imaging - Imaging and Multimedia Analytics in a Web and Mobile World (EI-IMAWM)
- **Best Paper Runner-up Award:** 2015 International Conference on Image Processing (ICIP)
- **Student Travel Award:** 2012 International Symposium on Biomedical Imaging (ISBI)
- **Student Travel Award:** 2011 International Workshop on Pattern Recognition in NeuroImaging (PRNI)
- **Top 10 Student Paper Award:** 2011 International Symposium on Biomedical Imaging (ISBI)
- **Best Paper Award:** 2010 Medical Image Analysis - Medical Image Computing and Computer Assisted Intervention (MedIA-MICCAI)

GRANTS

- [1] Role: **Principal Investigator**, "Adaptive Automated Threat Recognition Algorithm for CT-based Object Detection Systems 2." ALERT Department of Homeland Security, 9/1/2018~12/31/2018, \$50,000.
- [2] Role: **Principal Investigator**, Co-PI: Charles Bouman, Juan Wachs, "Automated Target Recognition for Weapon Seeker Target Acquisition or Re-acquisition from Unmanned Aerial Vehicles (UAVs)." Purdue institute for Global Security and Defense Innovation (i-GSDI), 4/16/2018~ 9/15/2018, \$40,000.
- [3] Role: **Principal Investigator**, Co-PI: Charles Bouman, "Small-Scale Characterization of Homemade Explosives (HMEs) - Characterization and Elimination of Illicit Explosives." ALERT Department of Homeland Security, 1/1/2017~ 6/30/2017, \$11,113.
- [4] Role: **Principal Investigator**, Co-PI: Charles Bouman, "Adaptive Automated Threat Recognition Algorithm for CT-based Object Detection Systems." ALERT Department of Homeland Security, 12/1/2016~3/15/2018, \$150,000.
- [5] Role: **Principal Investigator**, Co-PI: Charles Bouman, "Automatic, Near-Real-Time Detection of Moving Objects in Video." Sandia Corporation, 9/2/2016~9/1/2017, \$70,000.

REFEREED
JOURNAL
PUBLICATIONS

- [1] S. Zhang, Z. Song, D. Godaliyadda, **D. Ye**, A. Chowdhury, A. Sengupta, G. Buzzard, C. Bouman, G. Simpson. "Dynamic Sparse Sampling for Confocal Raman Microscopy." *Analytical Chemistry*, 90(7):4461– 4469, March 2018.
- [2] D. Godaliyadda, **D. Ye**, M. Uchic, M. Groeber, G. Buzzard, C. Bouman. "A Framework for Dynamic Image Sampling Based on Supervised Learning." *IEEE Transactions on Computational Imaging*, 4(1):1–16, March 2018.
- [3] A. Chowdhury, **D. Ye**, Z. Song, S. Zhang, H. Hedderich, B. Mallick, S. Thirunahari, S. Ramakrishnan, A. Sengupta, E. Gualtieri, C. Bouman, G. Simpson. "Second Harmonic Generation Guided Raman Spectroscopy for Sensitive Detection of Polymorph Transitions." *Analytical Chemistry*, 89(11):5958–5965, May 2017.
- [4] N. Scarborough, D. Godaliyadda, **D. Ye**, D. Kissick, S. Zhang, J. Newman, M. Sheedlo, A. Chowdhury, R. Fischetti, C. Das, G. Buzzard, C. Bouman, G. Simpson. "Dynamic X-ray Diffraction Sampling for Protein Crystal Positioning." *Journal of Synchrotron Radiation*, 24(1):188–195, January 2017.
- [5] R. Zhang, **D. Ye**, D. Pal, J-B. Thibault, K. Sauer, C. Bouman. "A Gaussian Mixture MRF for Model-Based Iterative Reconstruction." *IEEE Transactions on Computational Imaging*, 2(3):359–374, September 2016.

- [6] B. Menzey, A. Jakaby, S. Bauery, J. Kalpathy-Cramery, K. Farahaniy, J. Kirbyy, Y. Burreny, N. Porzy, J. Slotboomy, R. Wiesty, L. Lancziy, E. Gerstnery, T. Arbel, B. Avants, N. Ayache, P. Buendia, D. Collins, N. Cordier, J. Corso, A. Criminisi, T. Das, H. Delingette, C. Demiralp, C. Durst, J. Festa, E. Geremia, B. Glocker, P. Golland, X. Guo, A. Hamamci, K. Iftekharuddin, R. Jena, N. John, E. Konukoglu, D. Lashkari, J. Mariz, R. Meier, S. Pereira, D. Precup, S. Price, T. Riklin-Raviv, S. Reza, M. Ryan, L. Schwartz, H. Shin, J. Shotton, C. Silva, N. Sousa, N. Subbanna, G. Szekely, T. Taylor, O. Thomas, N. Tustison, G. Unal, M. Weber, M. Wintermark, **D. Ye**, L. Zhao, B. Zhao, D. Zikic, M.I Prastaway, M. Reyesyz, K. Leemputyz. "The Multimodal Brain Tumor Image Segmentation Benchmark (BRATS)." *IEEE Transactions on Medical Imaging*, 34(10):1993–2024, October 2015.
- [7] **D. Ye**, B. Desjardins, J. Hamm, H. Litt, K. M. Pohl. "Regional Manifold Learning for Disease Classification." *IEEE Transactions on Medical Imaging*, 33(6):1236–1247, June 2014.
- [8] E. Konukoglu, B. Glocker, **D. Ye**, A. Criminisi, K. M. Pohl. "Discriminative Segmentation-Based Evaluation through Shape Dissimilarity." *IEEE Transactions on Medical Imaging*, 31(12):2278–2289, December 2012.
- [9] J. Hamm, **D. Ye**, R. Verma, C. Davatzikos. "GRAM: A Framework for Geodesic Registration on Anatomical Manifolds." *Medical Image Analysis*, 14(5):633–642, October 2010. **MedIA-MICCAI Best Paper Award**
- [10] **D. Ye**, C. Davatzikos, H. Litt. "Characterizing Right Ventricular Shape Variations via Subject-Adapted Voxel-Based Morphometry: Application to CMR of Tetralogy of Fallot." *Journal of Cardiovascular Magnetic Resonance*, 12(Suppl 1):237, January 2010.

CONFERENCE
PUBLICATIONS

- [1] A. Ziabari, **D. Ye**, S. Srivastava, J-B. Thibault, K. Sauer, C. Bouman. "3D Deep Residual Learning for CT Image Denoising with Multi-GPU Implementation." In: *Proceedings of the 2018 Asilomar Conference on Signals, Systems, and Computers (Asilomar 2018)*, October 28–31, 2018.
- [2] A. Ziabari, **D. Ye**, S. Srivastava, K. Sauer, J-B. Thibault, L. Fu, C. Bouman. "Model Based Iterative Reconstruction With Spatially Adaptive Sinogram Weights for Wide-Cone Cardiac CT." In: *Proceedings of the 2018 International Conference on Image Formation in X-Ray Computed Tomography (CT Meeting 2018)*, May 20–23, 2018. **Oral Presentation**
- [3] **D. Ye**, S. Srivastava, J-B. Thibault, K. Sauer, C. Bouman. "Deep Residual Learning for Model-based Iterative CT Reconstruction using Plug-and-Play Framework." In: *Proceedings of the 2018 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP 2018)*, April 15–20, 2018. **Invited, Oral Presentation**
- [4] **D. Ye**, J. Li, Q. Chen, J. Wachs, C. Bouman. "Deep Learning for Moving Object Detection from a Single Camera in UAVs." In: *Proceedings of the 2018 IS&T International Symposium on Electronic Imaging (EI 2018)*, January 28–February 2, 2018. **Invited, Oral Presentation, Best Paper Award**
- [5] S. Zhang, Z. Song, D. Godaliyadda, **D. Ye**, A. Chowdhury, A. Sengupta, G. Buzzard, C. Bouman, G. Simpson. "A Supervised Learning Approach for Dynamic Sampling in Raman Hyperspectral Imaging." In: *Proceedings of the 2018 IS&T International Symposium on Electronic Imaging (EI 2018)*, January 28–February 2, 2018. **Oral Presentation**
- [6] S. Zhang, Z. Song, D. Godaliyadda, **D. Ye**, A. Sengupta, G. Buzzard, C. Bouman, G. Simpson. "Dynamic Sampling for Raman Imaging." In: *Proceedings of the 2018 SPIE*

International Conference on Photonics West (SPIE Photonics West 2018), January 27–February 1, 2018. **Oral Presentation**

- [7] **D. Ye**, S. Srivastava, J-B. Thibault, K. Sauer, C. Bouman. "ROI Reconstruction for Model Based Iterative Reconstruction (MBIR) via a Coupled Dictionary Learning." In: *Proceedings of the 2017 SPIE International Conference on Medical Imaging (SPIE MI 2017)*, February 11–16, 2017.
- [8] S. Majee, **D. Ye**, G. Buzzard, C. Bouman. "A Model Based Neuron Detection Approach Using Sparse Location Priors." In: *Proceedings of the 2017 IS&T International Symposium on Electronic Imaging (EI 2017)*, January 29–February 2, 2017. **Oral Presentation**
- [9] N. Scarborough, D. Godaliyadda, **D. Ye**, D. Kissick, S. Zhang, J. Newman, M. Sheedlo, A. Chowdhury, R. Fischetti, C. Das, G. Buzzard, C. Bouman, G. Simpson. "Synchrotron X-Ray Diffraction Dynamic Sampling for Protein Crystal Centering." In: *Proceedings of the 2017 IS&T International Symposium on Electronic Imaging (EI 2017)*, January 29–February 2, 2017. **Oral Presentation**
- [10] J. Li, **D. Ye**, T. Chung, M. Kolsch, J. Wachs, C. Bouman. "Multi-Target Detection and Tracking from a Single Camera in Unmanned Aerial Vehicles (UAVs)." In: *Proceedings of the 2016 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2016)*, October 9–14, 2016. **Oral Presentation**
- [11] D. Godaliyadda, **D. Ye**, M. Uchic, M. Groeber, M. Jackson, G. Buzzard, C. Bouman. "A Supervised Learning Approach for Dynamic Image Sampling." In: *Proceedings of the 2016 IS&T International Symposium on Electronic Imaging (EI 2016)*, February 14–18, 2016. **Oral Presentation**
- [12] P. Jin, **D. Ye**, C. Bouman. "Joint Metal Artifact Reduction and Segmentation of CT Images Using Dictionary-Based Image Prior and Continuous-Relaxed Potts Model." In: *Proceedings of the 2015 IEEE International Conference on Image Processing (ICIP 2015)*, September 27–30, 2015. **Oral Presentation, Runner-up Award for Best Paper**
- [13] **D. Ye**, S. Srivastava, D. Pal, J-B. Thibault, K. Sauer, C. Bouman. "Initial Condition for Fast Model-Based Iterative Reconstruction of Truncated Projection Data." In: *Proceedings of the 2015 Fully Three-Dimensional Image Reconstruction in Radiology and Nuclear Medicine (Fully3D 2015)*, May 31–June 4, 2015.
- [14] **D. Ye**, B. Desjardins, V. Ferrari, D. Metaxas, K. Pohl. "Auto-Encoding of Discriminating Morphometry From Cardiac MRI." In: *Proceedings of the 2014 IEEE International Symposium on Biomedical Imaging (ISBI 2014)*, April 29–May 2, 2014. **Oral Presentation**
- [15] **D. Ye**, D. Zikic, B. Glocker, A. Criminisi, E. Konukoglu. "Modality Propagation: Coherent Synthesis of Patient-specific Scans with Data-driven Regularization." In: *Proceedings of the 2013 International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2013)*, September 22–26, 2013.
- [16] **D. Ye**, J. Hamm, B. Desjardins, K. Pohl. "FLOOR: Fusing Locally Optimal Registrations." In: *Proceedings of the 2013 International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2013)*, September 22–26, 2013.
- [17] D. Zikic, B. Glocker, E. Konukoglu, J. Shotton, A. Criminisi, **D. Ye**, C. Demiralp, O. Thomas, T. Das, R. Jena, S. J. Price. "Context-Sensitive Classification Forests for Segmentation of Brain Tumor Tissues." In: *Proceedings of the 2012 Multimodal Brain Tumor Segmentation Challenge (BRATS 2012)*, October 1, 2012.

- [18] **D. Ye**, J. Hamm, D. Kwon, C. Davatzikos, K. Pohl. "Regional Manifold Learning for Deformable Registration of Brain MR Images." In: *Proceedings of the 2012 International Conference on Medical Image Computing and Computer Assisted Intervention (MICCAI 2012)*, October 1–5, 2012.
- [19] Y. Ou, **D. Ye**, K. Pohl, C. Davatzikos. "Validation of DRAMMS among 12 Popular Methods in Cross-Subject Cardiac MRI Registration." In: *Proceedings of the 2012 International Workshop on Biomedical Image Registration (WBIR 2012)*, July 7–8, 2012. **Oral Presentation**
- [20] **D. Ye**, J. Hamm, K. Pohl. "Combining Regional Metrics for Disease-Related Brain Population Analysis." In: *Proceedings of the 2012 IEEE International Symposium on Biomedical Imaging (ISBI 2012)*, May 2–5, 2012. **Student Travel Award**
- [21] **D. Ye**, H. Litt, C. Davatzikos, K. Pohl. "Morphological Classification: Application to Cardiac MRI of Tetralogy of Fallot." In: *Proceedings of the 2011 International Conference on Functional Imaging and Modeling of the Heart (FIMH 2011)*, May 25–27, 2011. **Oral Presentation**
- [22] **D. Ye**, K. Pohl, C. Davatzikos. "Semi-Supervised Pattern Classification: Application to Structural MRI of Alzheimer's Disease." In: *Proceedings of the 2011 International Workshop on Pattern Recognition in NeuroImaging (PRNI 2011)*, May 16–18, 2011. **Oral Presentation, Student Travel Award**
- [23] N. Batmanghelich, **D. Ye**, K. Pohl, B. Taskar, C. Davatzikos. "Disease Classification and Prediction via Semi-supervised Dimensionality Reduction." In: *Proceedings of the 2011 IEEE International Symposium on Biomedical Imaging (ISBI 2011)*, March 30–April 2, 2011. **Oral Presentation, Top 10 Student Paper**
- [24] **D. Ye**, K. Pohl, H. Litt, C. Davatzikos. "Groupwise Morphometric Analysis Based on High Dimensional Clustering." In: *Proceedings of the 2010 IEEE Computer Society Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA 2010)*, June 14, 2010.
- [25] **D. Ye**, D. Kwon, I. Yun, S. Lee. "Fast Multi-Scale Vessel Enhancement Filtering." In: *Proceedings of the 2008 SPIE International Conference on Medical Imaging (SPIE MI 2008)*, February 16–21, 2008.

PATENTS

Filed

- [1] **D. Ye**, S. Srivastava, J-B. Thibault, K. Sauer, C. Bouman, J. Hsieh. "Tomographic Reconstruction using Machine Learning." (Licensed to General Electric Corporation)
- [2] **D. Ye**, A. Ziabari, S. Srivastava, J-B. Thibault, K. Sauer, C. Bouman, F. Lin. "Iterative Tomographic Reconstruction with Spatially-Adaptive Sinogram-Weights." (Licensed to General Electric Corporation)

STUDENTS ADVISING

Jing Li (Thesis Committee Member, 2015–Current, Primary adviser: Charles Bouman)

PhD student in Electrical and Computer Engineering, Purdue University

- Vision-based collision avoidance system for delta-wing airframes

Ang Wee Kiong (Co-Advisor, 2017, Primary adviser: Oleg Yakimenko)

Master student in Systems Engineering, Naval Postgraduate School

- Assessment of an onboard electro-optical sensor to enable to detect-and-sense capability for UAVS operating in a cluttered environment (NPS Outstanding Thesis)

PROFESSIONAL
SERVICE

Referee Service

- *Optics Express*
- *IEEE Transactions on Computational Imaging*
- *IEEE Transactions on Medical Imaging*
- *IEEE Transactions on Image Processing*
- *International Journal of Computer Vision*
- *Journal of Biomedical and Health Informatics*
- *International Conference on Medical Image Computing and Computer Assisted Intervention*

SOFTWARE
SKILLS

Computer Programming

- C, C++, Python, Perl, UNIX shell scripting, GNU make

Numerical Analysis

- MATLAB, R

Deep Learning

- Tensorflow, PyTorch

REFERENCES
AVAILABLE TO
CONTACT

Dr. Charles A. Bouman (e-mail: bouman@purdue.edu; phone: +1-765-494-0340)

- Showalter Professor of Electrical and Computer Engineering and Biomedical Engineering, Purdue University
- 465 Northwestern Avenue, West Lafayette, IN 47907

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- Associate Professor of Electrical Engineering, University of Notre Dame
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- Wallace T. Miller Sr. Professor of Radiology and Electrical and Systems Engineering, University of Pennsylvania
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Dr. Kilian Pohl (e-mail: kilian.pohl@sri.com; phone: +1-831-247-2275)

- Program Director of Biomedical Computing, Center for Health Sciences, SRI International
- 333 Ravenswood Ave, Menlo Park, CA 94025