Taly Gilat Schmidt, PhD

Current Positions

Assistant Professor, Department of Biomedical Engineering, Marquette University
Adjunct Assistant Professor, Department of Radiology, Medical College of Wisconsin

Contact Information

Marquette University
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Milwaukee, WI 53233
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EDUCATION

Stanford University, Stanford, California
Ph.D., Electrical Engineering, September 2005
M.S., Electrical Engineering, June 2002

University of Illinois at Urbana Champaign, Champaign, Illinois
B.S., Electrical Engineering, May 1998

ACADEMIC, SCHOLARLY, AND PROFESSIONAL EXPERIENCE

Assistant Professor	Department of Biomedical Engineering Marquette University, Milwaukee, Wisconsin	2006-present
Adjunct Assistant Professor	Department of Radiology Medical College of Wisconsin, Milwaukee, Wisconsin	2006-present
Research Assistant	Radiological Sciences Laboratory Stanford University, Stanford, California	2000-2005
Teaching Assistant	Department of Electrical Engineering Stanford University, Stanford, California	2003-2004
Electrical Engineer	Edison Engineering Development Program GE Healthcare, Waukesha, Wisconsin	1998-2000

PUBLICATIONS (* denotes students)

Refereed Journals

1. M. E. Hoppe*, D. Gandhi, G. M. Stevens, W.D. Foley, **T. G. Schmidt**, "Investigation of tilted-gantry acquisition for reducing breast dose in cardiac CT," *Medical Physics*, 40, pp. 121905:1-8, 2013.

2. P. A. Wolf*, J. H Jorgensen, **T. G. Schmidt**, E.Y Sidky, "Few-view single photon emission computed tomography (SPECT) reconstruction based on a blurred piecewise constant object model," *Physics in Medicine and Biology, 58 (16), pp. 5629-5652, 2013.*

3. F. Rupcich*, A. Badal-Solar, L. M. Popescu, I. Kyprianou, **T.G. Schmidt**, "Reducing radiation dose to the female breast during CT coronary angiography: A simulation study comparing breast shielding, angular tube current modulation, reduced kV, and partial angle protocols using an unknown-location signal-detectability metric," *Medical Physics*, *40 (8)*, pp. 081921, 2013.

4. D. Ma*, P. A. Wolf, A. V. Clough, **T. G. Schmidt**, "The Performance of MLEM for Dynamic Imaging From Simulated Few-View, Multi-Pinhole SPECT," *IEEE Tran. Nuc. Sci., 60 (1),* pp. 115-123, 2013.

5. F. Rupcich*, A. Badal-Solar, I. Kyprianou, **T.G. Schmidt**, "A database for estimating organ dose for coronary angiography and brain perfusion CT scans for arbitrary spectra and angular tube current modulation," *Medical Physics*, *39 (6)*, pp. 5336-5346, 2012.

6. M. Hoppe*, **T.G. Schmidt**, "Estimation of Organ and Effective Dose due to Compton Backscatter Security Scans," *Medical Physics*, *39 (6),* pp. 3396-3403, 2012.

7. B. Kalinosky*, J.M. Sabol, B. Heckel, K. Piacsek, **T.G. Schmidt**, "Quanitfying the tibiofemoral joint space using x-ray tomosynthesis, " *Medical Physics*, pp. 6672-6682, 2011.

8. **T.G. Schmidt,** F. Pektas*, "Region-of-interest material decomposition from truncated energy-resolved CT," *Medical Physics*, *38, (10)*, pp.5657-5666, 2011.

9. **T. G. Schmidt**, "What is inverse-geometry CT?" *Journal of Cardiovascular Computed Tomography,* 5 (3), 2011.

10. **T. G. Schmidt**, "Breast CT: Current Status and New Directions," *Current Medical Imaging Reviews*, 6 (2), pp. 61-71, 2010.

11. **T. G. Schmidt**, "CT energy weighting in the presence of scatter and limited energy resolution," *Medical Physics*, 37 (3), pp. 1056-1067, 2010.

12. **T. G. Schmidt**, "Optimal image-based weighting for energy-resolved CT," *Medical Physics*, 36 (6), pp. 3018-3027, 2009.

13. R. A. Bhagtani*, **T. G. Schmidt**, "Simulated scatter performance of an inverse-geometry dedicated breast CT system," *Medical Physics*, 36 (3), pp. 788-796, 2009.

14. **T. G. Schmidt**, N. R. Bennett, S. R. Mazin, J. Star-Lack, E. G. Solomon, R. Fahrig, N. J. Pelc, "A prototype table-top inverse-geometry volumetric CT system," *Medical Physics*, 33, pp. 1867-1878, 2006.

15. **T. G. Schmidt**, R. Fahrig, N. J. Pelc, "A three-dimensional reconstruction algorithm for an inverse-geometry volumetric CT system," *Medical Physics*, 32, pp. 3234-3245, 2005.

16. **T. G. Schmidt**, R. Fahrig, E. G. Solomon, N. J. Pelc, "An inverse-geometry volumetric CT system with a large-area scanned source: A feasibility study," *Medical Physics*, 31, pp. 2623-2627, 2004.

International Conference Proceedings (refereed conference, non-refereed proceedings)

1. F. Rupcich*, **T. G. Schmidt**, "Experimental study of optimal energy weighting in energy-resolved CT using a CZT detector," in *Medical Imaging 2013: Physics of Medical Imaging*, Proc. SPIE 2013.

2. J. A. Cross*, B. McHenry, **T. G. Schmidt**, "Quantifying cross scatter in biplane fluoroscopy motion analysis systems," in *Medical Imaging 2013: Physics of Medical Imaging*, Proc. SPIE 2013.

3. P. A. Wolf*, J.H. Jorgensen, **T.G. Schmidt**, and E.Y. Sidky, "A First-Order Primal-Dual Reconstruction Algorithm for Few-View SPECT," In *Proceedings of the IEEE Nuclear Science Symposium / Medical Imaging Conference*, 2012.

4. **T. G. Schmidt**, "An empirical method for correcting the detector spectral response in energy-resolved CT," in *Medical Imaging 2012: Physics of Medical Imaging*, Proc. SPIE 8313, 831312, SPIE 2012.

5. P. A. Wolf*, E.Y. Sidky, and **T.G. Schmidt**. "A Compressed Sensing Algorithm for Sparse-view Pinhole Single Photon Emission Computed Tomography," In *Proceedings of the IEEE Nuclear Science Symposium / Medical Imaging Conference*, 2011.

6. F. Rupcich*, A. Badal, I. Kyprianou, **T. G. Schmidt**, "Energy deposition in the breast during CT scanning: quantification and implications for dose reduction," in *Medical Imaging 2010: Physics of Medical Imaging*, Proc. SPIE 7961, 796128, SPIE 2011.

7. D. Ma*, A.V. Clough, **T. G. Schmidt**, "Multi-pinhole dynamic SPECT imaging: simulation and system optimization," in *Medical Imaging 2010: Physics of Medical Imaging*, Proc. SPIE 7622, 76220U, SPIE 2010.

8. **T. G. Schmidt**, "Preliminary feasibility of dedicated breast CT with an inverse geometry," in *Medical Imaging 2009: Physics of Medical Imaging*, 7258, 72582Y1-6, SPIE 2009.

9. **T. G. Schmidt**, R. Fahrig, N. J. Pelc, "Noise simulations for an inverse-geometry volumetric CT system," in *Medical Imaging 2004: Physics of Medical Imaging*, 5368, pp. 420-427, Proc. SPIE 2005.

10. S. R. Mazin, **T. G. Schmidt**, E. G. Solomon, R. Fahrig, N. J. Pelc, "Geometry analysis of an inverse- geometry volumetric CT system with multiple detector arrays," in *Medical Imaging 2004: Physics of Medical Imaging*, 5368, pp. 320-329, Proc. SPIE 2004.

11. **T. Gilat**, R. Fahrig, N. J. Pelc, "Three-dimensional reconstruction algorithm for a reverse-geometry volumetric CT system with a large-array scanned source," in *Medical Imaging 2003: Physics of Medical Imaging*, 5030, pp. 103-111, Proc. SPIE 2003.

RESEARCH GRANTS AND CONTRACTS

Funding to date as Principal Investigator (PI) or Project Director: Direct Costs (DC): $998,015; with indirect costs (wIDC):$1,299,560

Extramural Funding

Direct Costs (DC); With Indirect Costs (wIDC); effort over total grant period listed after role

Awarded while at Marquette University

National Institutes of Health **R21 Grant (1 R21 EB015094-01A1)**
Title: Advancing Energy-Resolved CT Systems for Imaging K-edge Contrast Agents
PI: Taly Schmidt (3.35 summer mo) Period: 12/15/12-12/14/14
DC: $275,000; wIDC: $394,769

GE Healthcare
Title: Advanced Cardiac CT Applications
PI: Taly Schmidt (16% AY) Period: 01/01/13-12/31/14
DC: $59,018; wIDC: $73,182

GE Healthcare
Title: Evaluating the Dose and Image Quality Performance of Organ-based Tube Current Modulation
PI: Taly Schmidt (as needed) Period: 07/01/12-06/30/14
Direct Costs: $50,638; wIDC: $62,792

Department of Homeland Security
Title: Develop Advanced 3D Volumetric Segmentation Algorithms for Image Data of CT-Scanned Bags at the Airport Security Checkpoint
PI: Xin Feng (EE, Marquette University) Period: 04/08/12-12/18/12
Direct Costs: $46,512; wIDC: $70,000
Role: Co-I (as needed)

US Department of Education
National Institute on Disability and Rehabilitation Research # H133E100007,
Title: Rehabilitation Engineering Research Center on Technologies for Children with Orthopedic Disabilities
PI: Gerald F. Harris (Marquette University) Period: 10/1/2010-9/30/2015
DC: $4,456,124; wIDC: $4,750,000

Role: Project Director: "Development Project D3: Biplanar Fluoroscopic System for Dynamic, *in vivo* Foot and Ankle Motion Analysis" (4.5 summer mo, 15% AY)
DC (sub-project): $215,519 wIDC: $267,484

National Institutes of Health **Area Grant 1R15CA143713-01A1**
Title: Innovative Reconstruction Algorithms for Undersampled SPECT
PI: Taly Schmidt (4 summer months) Period: 07/01/10-06/30/13
DC: $257,985; wIDC: $361,478

Food and Drug Administration **Office of Women's Health**
Title: Radiation Dose and Excess Cancer Risk in Women Undergoing X-Ray Computed Tomography: Quantification and Risk Mitigation
PI: Iacovos Kyprianou (FDA) Period: 07/01/09-06/30/12
DC: $98,355 (Marquette subcontract)
Role: Co-I (as needed)

Alvin W. and Marion Birnschein Foundation
Title: Reducing the Radiation Dose to Women Receiving Cardiac CT Scans
PI: Taly Schmidt (as needed) Period: 01/01/10-12/31/10
DC: $20,000

Intramural Funding

College of Engineering **Student Centered Learning Grant**
Title: A Student Centered Learning Course Supplement to BIEN3300 Signals and Systems in Biomedical Engineering
PI: Brian Schmit and Taly Schmidt Period: 6/20/13-12/31/13
DC: $5,000

Marquette University **Regular Research Grant**
Title: Computed Tomography Systems with Energy-Resolved Detectors
PI: Taly Schmidt Period: 7/1/09-12/30/09
DC: $6000

Marquette University **Summer Faculty Fellowship / Regular Research Grant**
Title: Inverse Geometry versus Cone-Beam Geometry for Breast CTImaging: SNR Comparison
PI: Taly Schmidt Period: 1/20/08-8/30/08
DC: $10,500

PATENTS

U.S. Patent 7,103,138 "Sampling in Volumetric Computed Tomography, September 5, 2006.

PROFESSIONAL ACTIVITIES AND SERVICE

Memberships in Professional Societies

Institute of Electrical and Electronics Engineers (IEEE)
American Association of Physicists in Medicine (AAPM)
Sigma Xi Scientific Research Society

Peer-Reviewed Journal Affiliations

Manuscripts Reviewed For:

IEEE Transactions on Medical Imaging
IEEE Transactions on Nuclear Science
Medical Physics
International Journal of Biomedical Imaging
Medical and Biological Engineering and Computing
Applied Radiation and Isotopes
Journal of Applied Physics

Guest Associate Editor for *Medical Physics*

Invited Scientific Service

Grant Reviewer for National Institutes of Health (8 study section meetings)

Organizing Committee, Abstract Reviewer, and Session Chair, SPIE Medical Imaging: Medical Imaging Physics Conference (2011- present)

Abstract Reviewer, AAPM Annual Meeting (2013)

Reviewer for Midwestern Association of Graduate Schools Thesis Competition, 2010

Session chair, Rocky Mountain Bioengineering Symposium, Milwaukee, WI 2009

COMMITTEES AND UNIVERSITY SERVICE

University / College Service

Member, MU High Performance Computing Governance Committee, 2012-present

Member, College of Engineering Technology Committee, 2011-2012

Member, College of Engineering Computer Systems Engineer Search Committee, 2007, 2008

Departmental Service

Graduate Program Assessment Leader, Department of Biomedical Engineering, 2008-present.

Member, Graduate Program Committee, Department of Biomedical Engineering, 2006-present

Member, Chair Search Committee, Department of Biomedical Engineering, 2012-2013

Member, Faculty Search Committee, Department of Biomedical Engineering, 2006

HONORS AND AWARDS

Awarded to Taly Gilat Schmidt

College of Engineering Outstanding Researcher Award, 2013

Radiological Society of North America Research Trainee Prize, 2005

National Science Foundation Graduate Research Fellowship, 2000

Awarded to Students Mentored by Taly Gilat Schmidt

First Place to Franco Rupcich in the IEEE Great Lakes Biomedical Conference Student Poster Competition, 2013.

Second Place to Michael Hoppe in the Young Investigator Presentation Competition, Annual Meeting of the North Central Chapter of the AAPM, 2011.

Second Place to Franco Rupcich in the Young Investigator Presentation Competition, Annual Meeting of the North Central Chapter of the AAPM, 2010.

MEDIA COVERAGE

CNN.com, “Airport body scanners: Are they safe?” Mike Ahlers, June 11, 2012.

WUWM Lake Effect Program Interview, “Full Body Scanner Safety - A New Study Calls for More Study,” June 19, 2012

Chicago Tribune, “Lingering doubt on scanners,” Josh Noel, July 17, 2012.

Dr. Radio, Sirius XM 81, Live Interview on Airport Backscatter Systems, July 18, 2012.