Curriculum Vitae

Tzuyang Yu
Professor, Ph.D.
Department of Civil and Environmental Engineering
University of Massachusetts Lowell
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11/19/2021

EDUCATION AND ACADEMIC QUALIFICATIONS

1. Education

Doctor of Philosophy (Ph.D.) in Civil and Environmental Engineering, June 2008
Massachusetts Institute of Technology (M.I.T.), Cambridge, MA
Dissertation: *Condition Assessment of GFRP-retrofitted Concrete Cylinders Using Electromagnetic Wave Measurements*
Advisor: Oral Buyukozturk, Ph.D.

Master of Engineering (M.Eng.) in Civil and Environmental Engineering, June 2002
M.I.T., Cambridge, MA
Master's Thesis: *Behavior of a Coupled Arch System*
Advisor: Jerome J. Connor, Sc.D.

Master of Science (M.Sc.) in Civil Engineering, June 1998
National Central University, Chungli, Taiwan
Master's Thesis: *Ultimate Bearing Capacity Analysis of Composite Ground Structures*
Advisor: Jui-Hung Chang, Ph.D.

Bachelor of Science (B.Sc.) in Construction Engineering, June 1996
National Yunlin University of Science and Technology, Yunlin, Taiwan
Honors Thesis: *Dynamic Behavior of Structural Systems Considering the Soil-Structure Interaction Effect*
Advisor: Wen-Hua Wu, Ph.D.

2. Academic Experience

Full Professor, 09/01/21~present, Department of Civil and Environmental Engineering, University of Massachusetts Lowell, Massachusetts

Associate Chair for Doctoral Studies, 09/01/16~08/31/21, Department of Civil and Environmental Engineering, University of Massachusetts Lowell, Massachusetts

Associate Professor, 09/01/14~08/31/21, Department of Civil and Environmental Engineering, University of Massachusetts Lowell, Massachusetts

Visiting Associate Professor, 07/26/16~07/28/16, College of Engineering, National Chung-Hsing University (NCHU), Taichung, Taiwan

Assistant Professor, 09/01/08~08/31/14, Department of Civil and Environmental Engineering, University of Massachusetts Lowell, Massachusetts

Visiting Assistant Professor, 08/14/13~08/22/13, College of Engineering, National Chung-Hsing University (NCHU), Taichung, Taiwan

Research Assistant, 09/01/03~06/30/08, Department of Civil and Environmental Engineering, M.I.T., Cambridge, Massachusetts

Research Assistant, 10/01/00~07/15/01, Institute of Earth Sciences, Academia Sinica, Taipei, Taiwan

PUBLICATIONS

Books and Book Chapters (13)

1 **2009** **Yu, T**. *Damage Detection of GFRP-concrete Systems Using Electromagnetic Waves: Theory and Experiment*. Lambert Academic Publishing (LAP), September, Koln, Germany (ISBN: 978-3-8383-1186-9)

2 **2009** Buyukozturk, O., and **T. Yu**, "Chapter 7: A Novel Structural Assessment Technique to Prevent Damaged FRP-Wrapped Concrete Bridge Piers from Collapse," In: *Seismic Risk Assessment and Retrofitting: With Special Emphasis on Existing Low Rise Structures* (Geotechnical, Geological and Earthquake Engineering Series), Springer, New York, NY (ISBN: 978-9-0481-2680-4); doi: 10.1007/9789048126811.

3 **2012** Gyekenyesi, A.I., **T. Yu**, P. Shull, A.A. Diaz, H.F. Wu. (ed.), *Proceedings of Nondestructive Characterization for Composite Materials, Aerospace Engineering, Civil Infrastructure, and Homeland Security*, vol. 8347, SPIE, San Diego, CA (ISBN: 978-0-8194-9004-9); doi: 10.1117/12.928751.

4 **2013** **Yu, T.,** Gyekenyesi, A.I., P. Shull, A.A. Diaz, H.F. Wu. (ed.), *Proceedings of Nondestructive Characterization for Composite Materials, Aerospace Engineering, Civil Infrastructure, and Homeland Security*, vol. 8694, SPIE, San Diego, CA (ISBN: 978-0-8194-9477-1); doi:10.1117/12.2029916.

5 **2014** **Yu, T**. "Chapter 12: Laser-based Sensing," In: *Sensor Technologies for Civil Infrastructures: Performance Assessment and Health Monitoring*, M.L. Wang, J.P. Lynch, H. Sohn (ed.), Woodhead Publishing, Cambridge, UK (ISBN: 978-1-7824-2244-0) / Revision in 2020.

6 **2014** Wu, H.F., **T. Yu**, A.L.Gyekenyes, P.J. Shull (ed.), *Proceedings of Nondestructive Characterization for Composite Materials, Aerospace Engineering, Civil Infrastructure,*

and Homeland Security , vol. 9063, SPIE, San Diego, CA (ISBN: 978-0-8194-9989-9); doi: 10.1117/12.2052786

7 **2016** **Yu, T.**, A.L. Gyekenyesi, P.J. Shull, H.F. Wu (ed.), *Proceedings of Nondestructive Characterization and Monitoring of Advanced Materials, Aerospace, and Civil Infrastructure X*, vol. 9804, SPIE, San Diego, CA (ISBN: 978-1-5106-0045-4); doi: doi:10.1117/12.2218739

8 **2017** H. F. Wu; A.L. Gyekenyesi; P.J. Shull, **T. Yu** (ed.), *Proceedings of Nondestructive Characterization and Monitoring of Advanced Materials, Aerospace, and Civil Infrastructure XI*, vol. 10169, SPIE, Portland, OR (ISBN: 978-1-5106-0823-8), doi: 10.1117/12.2280363.

9 **2018** P.J. Shull, A.L. Gyekenyesi, **T. Yu**, H.F. Wu (ed.), *Proceedings of Nondestructive Characterization and Monitoring of Advanced Materials, Aerospace, Civil Infrastructure, and Transportation XII*, vol. 10599, SPIE, Denver, CO, doi: 10.1117/12.2326422.

10 **2019** A.L. Gyekenyesi, **T. Yu**, P. Shull, F.H. Wu, (ed.), *Proceedings of Nondestructive Characterization and Monitoring of Advanced Materials, Aerospace, Civil Infrastructure, and Transportation XIII*, vol. 10971, SPIE, Denver, CO, doi: 10.1117/12.2534551.

11 **2020** **Yu, T.**, P. Shull, F.H. Wu, A. Gyekenyesi (ed.), *Proceedings of Nondestructive Characterization and Monitoring of Advanced Materials, Aerospace, Civil Infrastructure, and Transportation VIX*, vol. 11380, SPIE, doi: 10.1117/12.2572578.

12 **2021** **Yu, T.**, F.H. Wu, P. Shull, A. Gyekenyesi (ed.), *Proceedings of Nondestructive Characterization and Monitoring of Advanced Materials, Aerospace, Civil Infrastructure, and Transportation VIX*, vol. 11592, SPIE, doi: 10.1117/12.2591896.

13 **2021** **Yu, T.**, *A Concise Approach to Dynamics*, Cambridge Scholars Publishing, Cambridge, U.K. (ISBN: 9781527568174)

14 **2021** **Yu, T.**, "Distributed Surface Sensing for Structural Health Monitoring using Smart Textiles," In: The Rise of Smart Cities: Advanced Structural Sensing and Monitoring Systems, A.H. Alavi, M.Q. Feng, P. Jiao, Z.S. Kohdaei (ed.), Elsevier (*to be published*)

Refereed Journal Articles (29/32)

1 **2006** Buyukozturk O., **T. Yu**, JA Ortega. A methodology for determining complex permittivity of construction materials based on transmission-only coherent, wide-bandwidth free-space measurements. *Cement and Concrete Composites*; 28 (4): 349-359; doi:10.1016/j.cemconcomp.2006.02.004

2 **2008** **Yu, T.**, O. Buyukozturk. A far-field airborne radar NDT technique for detecting debonding in GFRP-retrofitted concrete structures. *NDT&E International*; 41: 10-24; doi:10.1016/j.ndteint.2007.07.002

3 **2009** Buyukozturk O., **T. Yu**. Far-field radar NDT technique for detecting GFRP debonding from concrete. *Construction Building Materials*; 23 (4): 1678-1689; doi:10.1016/j.conbuildmat.2007.09.009

4 **2011** **Yu, T**. A distant damage assessment method for multi-layer composite systems using electromagnetic waves, *Journal of Engineering Mechanics*, ASCE; 137 (8): 547-560; doi:10.1016/j.conbuildmat.2007.09.009

5 **2012** Zou, X., A. Chao, Y. Tian, N. Wu, Y. Tian, **T. Yu**, and X. Wang, An experimental study on the concrete hydration process using Fabry-Perot fiber optic temperature sensors. *Measurement*; 45: 1077-82; doi:10.1016/j.measurement.2012.01.034

6 **2012** **Yu, T.**, C. Niezrecki, F. Ansari, Muldi-modal remote sensing system for transportation infrastructure inspection and monitoring, *Advanced Research in Applied Artificial Intelligence*, 7345: 95-103; doi: 10.1007/978-3-642-31087-4_11

7 **2013** Zou, X., A. Chao, Y. Tian, N. Wu, Y. Tian, **T. Yu**, and X. Wang. A novel Fabry-Perot fiber optic temperature sensor embedded into Portland cement concrete for early age hydration heat study. *Smart Structures and Systems*; 12 (1): 041-054; doi:10.12989/sss.2013.12.1.041

8 **2013** **Yu, T.**, B. Boyaci, F.H. Wu. A parametric study of the transient electromagnetic response of GFRP-wrapped concrete cylinders. *Research in Nondestructive Evaluation (RNDE)*; 24 (3): 125-153; doi:10.1080/09349847.20.2012.713162

9 **2015** Zou, X., T. Schmidtt, D. Perloff, N. Wu, T. Yu, and X. Wang (2015), Nondestructive corrosion detection using fiber optic photoacoustic generator, *Measurement* 62; 74-80; doi:10.1016/J.MEASUREMENT.2014.11.004

10 **2015** Wang, M., S. Jeon, C. Su, **T. Yu**, L-S. Tan, L.Y. Chiang, Synthesis of Photoswitchable Magnetic Au–Fullerosome Hybrid Nanomaterials for Permittivity Enhancement Applications, *Molecules* 20 (8); 14746-14760, doi: 10.1039/c5nr07363d

11 **2015** **Yu, T**., T.K. Cheng, A. Zhou, D. Lau, Defect Detection of FRP-bonded Concrete System using Acoustic-laser and Imaging Radar Techniques, *Construction and Building Materials* 109; 146-155, doi: 10.1016/j.conbuildmat.2015.12.113

12 **2015** Wang, M., S. Jeon, C. Su, **T. Yu**, L-S. Tan, L.Y. Chiang, Novel photoswitchable dielectric properties on nanomaterials of electronic core-shell Au-fullerosomes for GHz frequency applications, *Nanoscale*, doi: 10.1039/C5NR07363D

13 **2017** **Yu, T.** Quantitative assessment of CFRP-concrete cylinders using synthetic aperture radar images, *Research in Nondestructive Evaluation (RNDE),* 28 (3); doi: 10.1080/09349847.2016.1173266

14 **2016** Wang, M., **T. Yu**, L-S. Tan, A. Urbas, L. Chiang, Tunability of RF-Responses by Plasmonic Dielectric Amplification Using Branched e–-Polarizable C60-Adducts on Magnetic Nanoparticles, *Journal of Physical Chemistry Part C*, doi: 10.1021/acs.jpcc.6b05279

15 **2016** **Yu, T.**, T.K. Cheng, A. Zhou, D. Lau, Defect detection of FRP-bonded concrete system using acoustic-laser and imaging radar techniques, *Construction and Building Materials,* 109; 146-155, doi.org/10.1016/j.conbuildmat.2015.12.113

16 **2017** **Yu, T.**, J. Owusu-Twumasi, V. Le, Q. Tang, N. D'Amico, Surface and Subsurface Remote Sensing of Concrete Structures using Synthetic Aperture Radar Imaging, *ASCE, Journal of Structural Engineering*, ASCE, 143(10); 1-11, doi: 10.1061/(ASCE)ST.1943-541X.0001730

17 **2018** Du, C., J. Owusu Twumasi, Q. Tang, X. Guo, J. Zhou, **T. Yu**, X. Wang, All-optical Photoacoustic Sensors for Steel Rebar Corrosion Monitoring, *Sensors*, 18, 1353, doi:10.3390/s18051353

18 **2018** Alzeyadi, A., **T. Yu**, Characterization of Moisture Content in a Concrete Panel using Synthetic Aperture Radar Images, *Journal of Aerospace Engineering*, ASCE, 32 (1); doi.org/10.1061/(ASCE)AS.1943-5525.0000945

19 **2018** Wang, M., **T. Yu**, L-S Tan, A. Urbas, L. Chiang, Enhancement of Photoswitchable Dielectric Property by Conducting Electron Donors on Plasmonic Coreâ€"Shell Gold-Fluorenyl C60 Nanoparticles, *Journal of Physical Chemistry C*, 122(23); 12512-23, doi:10.1021/acs.jpcc.8b02676

20 **2018** Alzeyadi, A., **T. Yu**, Moisture determination of concrete panel using SAR imaging and the K-R-I transform, *Construction and Building Materials* 184; 351-360, doi:10.106/j.conbuildmat.2018.06.209

21 **2018** Tang, Q., **T. Yu**, Surface rust detection using ultrasonic waves in a cylindrical geometry by finite element simulation, *Infrastructures* 3, 29; doi:10.3390/infrastructures3030029

22 **2018** Yin, H., M. Wang, **T. Yu**, L-S Tan, L.Y. Chiang, Photoswitchable Charge-Polarizer on GHz-Responsive Trilayered Core-Shell Dielectric Nanoparticles, *Molecules*, 23; 1873, doi:10.3390/molecules23081873

23 **2019** Tang, Q., J. Hu, **T. Yu**, Electromagnetic evaluation of brick specimens using synthetic aperture radar imaging, *NDT&E International*, 104; 98-107, doi:10.1016/j.ndteint.2019.04.006

24 **2019** Du, C, Q. Tang, J. Zhou, X. Guo, **T. Yu**, X. Wang, Fiber Optic Sensors Based on Photoacoustic Effect for Rebar Corrosion Measurement, *IEEE Transactions on Instrumentation and Measurement*, 68 (11); 4559-65, doi: 10.1109/TIM.2018.2890318

25 **2020** Du, C., S. Dutta, P. Kurup, **T. Yu**, X. Wang, A review of railway infrastructure monitoring using fiber optic sensors, *Sensors and Actuators A: Physical*, 303; 111728, doi: 10.1016/j.sna.2019.111728

26 **2020** Tang, Q., C. Du, X. Wang, **T. Yu**, Temperature and crack detection of steel rods using an all-optical photoacoustic ultrasound system, *Construction and Building Materials*, 262; 119537, doi: 10.1016/j.conbuildmat.2020.119537

27 **2020** Alzeyadi, A., **T. Yu**, Subsurface characterization of moisture content and water-to-cement ratio of concrete specimens using remote synthetic aperture radar imaging, *Journal of Applied Remote Sensing*, 14 (2); 024520-1-17, doi: 10.1117/1.JRS.14.024520

28 **2020** Wang, M., H. Yin, **T. Yu**, L-S. Tan, A. Urbas, L.Y. Chiang, Reversable enlargement of photoswitchable dielectric properties by plasmonic [60]fullerrenyl core-shell nanoparticles on graphene nanosheets, *Journal of Physical Chemistry C*, 124(10); 5759-71, doi: 10.1021/acs.jpcc.9b10102

29 **2020** Biondi, A.M., Q. Tang, J. Zhou, X. Guo, R. Wu, J. Wang, X. Wang, **T. Yu**, Structural health monitoring of a bridge using fiber optic sensing textile, *Structural Health Monitoring* (*under review*)

30 **2020** **Yu, T.**, Q. Tang, S. Vinayaka, J. Wang, Laser Doppler vibrometer monitoring of a steel Railroad bridge under traffic loading, *NDT/E International* (*under review*)

31 **2021** Alzeyadi, A., **T. Yu**, Remote characterization of chloride content in concrete specimens using synthetic aperture radar images, *Construction and Building Materials*, 302 (4); 124317; doi:10.1016/j.conbuildmat.2021.124317

32 **2020** **Yu, T.**, S. Ahmed, Q. Tang, Multi-modal structural health monitoring of a reinforced concrete beam under three-point bending, *Construction and Building Materials* (*under review*)

Refereed Conference Articles with Presentations (67)

1 **2000** Chang J-H, T. Yu. Finite element analysis of the energy criterion for crack extension. In: Proc. Symp. Recent Engng Computation. Sept. 1-3, Chungli, Taiwan (in Chinese).

2 **2000** Chang J-H, T. Yu. Calculation of energy flux vector on a plane crack in elastic bimaterial media, In: Proc 5th Natl Conf Structural Engng. Aug. 28-30, Taichung, Taiwan (in Chinese).

3 **2003** Buyukozturk O, T. Yu. Structural health monitoring and seismic impact assessment, In: Proc. of the 5th Natl Conf on Earthquake Engng. May 26-30, Istanbul, Turkey.

4 **2006** Buyukozturk O, T. Yu. Detecting deterioration behind GFRP wrap strengthening of bridge columns. (Keynote paper) In: Proc. Structural Faults & Repair, Jun. 13-15, Edinburgh, Scotland, UK.

5 **2006** Buyukozturk O, T. Yu. Understanding and assessment of debonding failures in FRP-concrete systems. In: Proc. of the 7th Intl. Congress on Advances in Civil Eng., Oct. 11-13, Istanbul, Turkey.

6 **2007** Buyukozturk O, T. Yu. A novel structural assessment technique to prevent damaged FRP-wrapped concrete bridge piers from total collapse. In: Proc. of the Intl. Workshop on Measures for the Prevention of Total Collapse of Existing Low-Rise Structures, Nov. 17-20, Istanbul, Turkey.

7 **2008** Yu, T., O Buyukozturk. A distant real-time radar NDE technique for the in-depth inspection of glass fiber reinforced polymer-retrofitted concrete columns. In: Proc. of SPIE, Vol.6934, Mar. 10-13, San Diego, CA; doi:10.1117/12.776270

8 **2009** Yu, T. Determining the optimal parameters in a distant radar NDE technique for debonding detection of GFRP-concrete systems. In: Proc. of SPIE, Vol. 7294, Mar. 9-12, San Diego, CA; doi:10.1117/12.815895

9 **2009** Laflamme, S., T. Yu, JJ Connor. Intelligent controller for smart base isolation of masonry structures, In: Proc. of the CanSmart 2009 Intl Workshop on Smart Mater. and Struct., Oct. 22-23, Montreal, Quebec, Canada.

10 **2010** Yu, T., R. Haupt. Damage inspection of fiber reinforced polymer-concrete systems using a distant acoustic-laser NDE technique, In: Proc SPIE Smart Structures/NDE Conf., San Diego, CA; doi: 10.1117/12.847630

11 **2011** Solak, I.C., **T. Yu**. Dielectric Measurement and Modeling of Cementitious Composite Panels Using a Coaxial Probe. In: *Proc SPIE Smart Structures/NDE Conf.*, San Diego, CA; doi: 10.1117/12.872439

12 **2011** **Yu, T.,** B. Boyaci. Geometric Analysis for the Size Estimation of Subsurface Delamination in Transient Electromagnetic Response. In: *Proc SPIE Smart Structures/NDE Conf.*, San Diego, CA; doi: 10.1117/12.880558

13 **2011** **Yu, T.**, Dielectric deamplification of multiphase cementitious composites in the frequency range of 0.5~4.5 GHz. In: *Proc Electrical Insulation Conf. (EIC)*, IEEE; doi:10.1109/EIC.2011.5996169

14 **2011** **Yu, T.**, H. Wang, H. Liu. Denoising of Time Domain Responses in Wireless Sensor Network for the Structural Health Monitoring of Transportation Infrastructure. In: *Proc. SpringSim ANSS*, SCS/ACM, pp.183-187 (ISBN:1-930638-56-6)

15 **2012** Lai, C-P, Y-J Ren, **T. Yu**. Scanning array radar system for bridge subsurface imaging. In: *Proc SPIE Smart Structures/NDE Conf.*, Vol. 8347, San Diego, CA; doi: 10.1117/12.915647

16 **2012** Liu, H., **T. Yu**, M.L. Wang. Condition assessment of rebar corrosion in concrete bridge decks using ground-penetrating radar. In: *Proc SPIE Smart Structures/NDE*, San Diego, CA *(Presentation Only)*

17 **2012** **Yu, T.**, S. Ahmed. Dielectric dispersion of cement paste and cement mortar specimens in the frequency range of 0.5GHz to 2GHz. In: *Proc SPIE Smart Structures/NDE*, San Diego, CA *(Presentation Only)*

18 **2012** **Yu, T.** Noncontact microwave NDT for rebar detection in concrete bridge piers using inverse synthetic aperture radar imaging. In: *Proc. ASNT Fall Conf*, Orlando, FL *(Presentation Only)*

19 **2012** **Yu, T.**, C. Niezrecki, F. Ansari. Multi-modal remote sensing system for transportation infrastructure inspection and monitoring. In: *Proc 25th Intl Conf Industrial, Engng & Other Appl of Applied Intell Sys (IEA/AIE),* Dalian, China, Jun. 9-12 / *Adv Res Appl Artificial Intelli*, Lecture Notes in Computer Science, 7345, pp.95-103.

20 **2012** **Yu, T.**, C. Niezrecki, C-P Lai, T Schmidt, S Ahmed, C Nonis. Multi-modal remote sensing system for the surface and subsurface inspection of bridges. In: *Proc 14th Structural Faults and Repair (SFR)*, Jul. 3-5, Edinburgh, UK.

21 **2012** Zou, X., A. Chao, N. Wu, Y. Tian, **T. Yu**, X. Wang. Miniature fiber optic temperature sensor for concrete structural health monitoring. In: *Proc SPIE Smart Structures/NDE*, Vol. 8345, Mar. 10-13, San Diego, CA; doi: 10.1117/12.915265

22 **2013** Wilson, J., **T. Yu**. Accelerated artificial corrosion monitoring of reinforced concrete slabs using the half-cell potential method. In: *Proc Symp Appl Geophys to Engng Envir Prob (SAGEEP)*, Mar. 17-21, Denver, CO.

23 **2013** **Yu, T.**, C-F Su, C-P Lai, H.F. Wu. Wideband subsurface radar for bridge structural health monitoring and nondestructive evaluation. In: *Proc SPIE Smart Structures/NDE*, Vol. 8694, Mar. 11-14, San Diego, CA; doi: 10.1117/12.2010120

24 **2013** Nonis, C., C. Niezrecki, **T. Yu**, S. Ahmed. C-F. Su, T. Schmidt. Implementation of Digital Image Correlation for Structural Health Monitoring of Bridges. In: *Proc 9th Intl. Workshop SHM*, Sep. 10-13, Stanford University, Dohrmann Grove, CA; ISBN-10: 1605951153.

25 **2013** Nonis, C., C. Niezrecki, **T. Yu**, S. Ahmed, C-F Su, T. Schmidt. Structural health monitoring of bridges using digital image correlation. In: *Proc SPIE Smart Structures/NDE*, Vol. 8695, Mar. 11-14, San Diego, CA; doi:10.1117/12.2009647

26 **2014** **Yu, T**., C. Nonis, C. Niezrecki, S. Ahmed, C-F Su, X. Zou, X. Wang. Multi-modal remote sensing for the condition assessment of concrete bridges using distant imaging radar and digital image correlation. In: *Structural Congress*, Structural Engineering Institute (SEI), ASCE, Boston, MA.

27 **2014** R. Gladstone, **Yu, T.**, Denoising analysis of synthetic aperture radar images using discrete wavelet transform for the radar NDE of concrete specimens. In: *Proc SPIE Smart Structures/NDE*, Mar. 9-13, San Diego, CA *(Presentation Only)*

28 **2014** **Yu, T.**, J. OwusuTwumasi. Dielectric modeling of cementitious specimens using an open-ended coaxial probe in the frequency range of 0.5GHz to 4.5 GHz. *Proc SPIE Smart Structures/NDE*, vol. 8694, Mar. 11-14, San Diego, CA *(Presentation Only)*

29 **2015** Le, V., **T. Yu**. Mass and stiffness estimation using mobile devices for structural health monitoring. In: *Proc SPIE Smart Structures/NDE*, Vol. 9437, Mar. 8-12, San Diego, CA; doi: 10.1117/12.2084036

30 **2015** Owusu Twumasi, J., **T. Yu**. Forward and inverse dielectric modeling of oven-dried cement paste speicmens in the frequency range of 1.02 GHz to 4.50 GHz. In: *Proc SPIE Smart Structures/NDE*, Vol. 9437, Mar. 8-12, San Diego, CA; doi: 10.1117/12.2075672

31 **2015** Tang, Q., **T. Yu**, M. Jen. Finite element analysis for the damage detection of light pole structures. In: *Proc SPIE Smart Structures/NDE*, Vol. 9437, Mar. 8-12, San Diego, CA; doi: 10.1117/12.2075689

32 **2016** Le, V.Q., **T. Yu**, J. Owusu Twumasi, Q. Tang. Sizing and ranging criteria for SAR images of steel and wood specimens. In: *Proc SPIE Smart Structures/NDE*, Mar. 20-24, Las Vegas, NV; doi: 10.1117/12.2218441

33 **2016** Owusu Twumasi, J., V.Q. Le, Q. Tang, **T. Yu**. Quantitative sensing of corroded steel rebar embedded in cement mortar specimens using ultrasonic testing, In: *Proc SPIE Smart Structures/NDE*, Mar. 20-24, Las Vegas, NV; doi: 10.1117/12.2218451

34 **2016** Bi, S., N. Wu, J. Zhou, X. Wang, J. Owusu Twumasi, Q. Tang, **T. Yu**. Ultrasonic transmission from fiber optic generators on steel plate, In: *Proc SPIE Smart Structures/NDE*, Mar. 20-24, Las Vegas, NV; doi: 10.1117/12.2219205

35 **2016** Tang, Q., **T. Yu**. Finite element simulation for damage detection of surface rust in steel rebars using elastic waves, In: *Proc SPIE Smart Structures/NDE*, Mar. 20-24, Las Vegas, NV; doi: 10.1117/12.2219265

36 **2016** D'Amico, N., **T. Yu,** Photogrammetric analysis of concrete specimens and structures for condition assessment, In: *Proc SPIE Smart Structures/NDE*, Mar. 20-24, Las Vegas, NV; doi: 10.1117/12.2218640

37 **2016** Reagan, D.R., C. Niezrecki, **T. Yu**, A. Sabato, R. Wilson. An autonomous unmanned aerial vehicle sensing system for structural health monitoring of bridges, In: *Proc SPIE Smart Structures/NDE*, Mar. 20-24, Las Vegas, NV; doi: 10.1117/12.2218370

38 **2016** Zhang, C., H. Zhang, **T. Yu**, X. Wang. Piezoelectric-based smart sensing system for I-type steel structural health monitoring, In: *Proc SPIE Smart Structures/NDE*, Mar. 20-24, Las Vegas, NV; doi: 10.1117/12.2218551

39 **2016** Qin, Y., J. OwusuTwumasi, V. Le, Y-J. Ren, C.P. Lai, **T. Yu**, Roadside IED detection using subsurface imaging radar and rotary UAV, In: *Proc SPIE 9823, Detection and Sensing of Mines, Explosive Objectives, and Obscured Targets XXI*, Apr. 17, Baltimore, MD; doi: 10.1117/12.2223445

40 **2016** Tang, Q., C. Du, X. Wang, **T. Yu**. Finite element simulation of a new ultrasonic fiber optic sensor using gold nanocomposite, In: *Ultrasonics for NDT 2016*, American Society for Nondestructive Testing (ASNT), Jul. 27-29, Mashantucket, CT.

41 **2017** Hu, J., **T. Yu**, Enhanced PVDF properties by multi-wall carbon nanotubes (MWCNT) for efficient energy harvesting, In: *Proc SPIE Smart Structures/NDE*, Mar. 25-29, Portland, OR; doi: 10.1117/12.2258234

42 **2017** Ingemi, C., J. Owusu Twumasi, S. Litt, **T. Yu**, Condition assessment of Corroded Steel Rebar in Free Space using Synthetic Aperture Radar Images, In: *Proc SPIE Smart Structures/NDE*, Mar. 25-29, Portland, OR; doi: 10.1117/12.2258658

43 **2017** D'Amico, N, **T. Yu**, Accuracy Analysis of Point Cloud Modeling for Evaluating Concrete Specimens, In: *Proc SPIE Smart Structures/NDE*, Mar. 25-29, Portland, OR; doi: 10.1117/12.2258404

44 **2017** **Yu, T.,** Synthetic aperture radar image processing techniques for damage detection of FRP-concrete systems, In: *Proc SPIE Smart Structures/NDE*, Mar. 25-29, Portland, OR; doi :10.1117/12.2249947

45 **2017** Tang, Q., **T. Yu**, Finite element simulation of ultrasonic waves in corroded reinforced concrete for early-stage corrosion detection, In: *Proc SPIE Smart Structures/NDE*, Mar. 25-29, Portland, OR; doi: 10.1117/12.2258665

46 **2017** Owusu-Twumasi, J., **T. Yu**, Corrosion current level estimation of rust samples using inverse dielectric spectroscopy, In: *Proc IEEE Electrical Insulation Conference (EIC)*, June 11-14, Baltimore, MD, doi: 10.1109/EIC.2017.8004648

47 **2017** Du, C., J. OwusuTwumasi, X. Guo, J. Zhou, Q. Tang, N. Wu, **T. Yu**, X. Wang, Fiber Optic Multiplexing Ultrasound Detection of Rebar in Concrete, In: *Proc Conf. Lasers and Electro-Optics Pacific Rim*, 31 July - 4 August, Sands Expo and Convention Center, Singapore.

48 **2018** Hu, J., Q. Tang, J. OwusuTwumasi, **T. Yu**, Characterization of steel rebar spacing using synthetic aperture radar imaging, In: *Proc SPIE Smart Structures/NDE*, Mar. 4-8, Denver, CO, doi: 10.1117/12.2295627

49 **2018** Alzeyadi, A., **T. Yu**, Characterization of the range effect in synthetic aperture radar images of concrete specimens for width estimation, In: *Proc SPIE Smart Structures/NDE*, Mar. 4-8, Denver, CO, doi: 10.1117/12.2294540

50 **2018** Ingemi, C.M., J. OwusuTwumasi, **T. Yu**, Electromagnetic characterization of white spruce at different moisture contents using synthetic aperture radar imaging, In: *Proc SPIE Smart Structures/NDE*, Mar. 4-8, Denver, CO, doi: 10.1117/12.2296343

51 **2018** Tang, Q., J. OwusuTwumasi, J. Hu, X. Wang, **T. Yu**, Finite element simulation of photoacoustic fiber optic sensors for surface corrosion detection on a steel rod, In: *Proc SPIE Smart Structures/NDE*, Mar. 4-8, Denver, CO, doi: 10.1117/12.2295032

52 **2018** Du, C., J. OwusuTwumasi, Q. Tang, N. Wu, **T. Yu**, X. Wang, Real time corrosion detection of rebar using embeddable fiber optic ultrasound sensor, In: *Proc SPIE Smart Structures/NDE*, Mar. 4-8, Denver, CO, doi: 10.1117/12.2302901

53 **2018** Dutta, S., P. Kurup, R. Gondle, D. Doherty, **T. Yu** ,X., Wang, Fiber Optic Sensing Technologies for Structural Health Monitoring of Underground Infrastructure, In: *Proc North American Society for Trenchless Technology (NASTT)'s 2018 No-Dig Show*, Mar. 25-29, Palm Springs, CA.

54 **2019** Tang, Q., S. Vinayaka, J. Wang, H. Gandhi, **T. Yu**, J. Zhou, X. Guo, X. Wang, Detection of ground motion induced pipe deformation using a sensing textile, In: *Proc 46th Annual Review Progress Quantitative Nondestructive Evaluation (QNDE)*, ASME, July 14-19, Portland OR.

55 **2019** Hu, J., A. Alzeyadi, **T. Yu**, Characterization of dielectric constant of masonry wall using synthetic aperture radar imaging, In: *Proc SPIE Smart Structures/NDE*, vol. 10971, Mar. 4-8, Denver, CO, doi: 10.1117/12.2514068

56 **2019** Ingemi, C., **T. Yu**, Detection of grain angle in wood specimens using synthetic aperture radar imaging, In: *Proc SPIE Smart Structures/NDE*, vol. 10971, Mar. 4-8, Denver, CO, doi: 10.1117/12.2513972

57 **2019** Tang, Q., J. Hu, **T. Yu**, Effect of rebar geometries on ultrasonic waves propagation in reinforced concrete structures using finite element method, In: *Proc SPIE Smart Structures/NDE*, vol. 10971, Mar. 4-8, Denver, CO, doi: 10.1117/12.2513491

58 **2019** Ingemi, C., **T. Yu**, Estimating the density of wood specimens using synthetic aperture radar imaging, In: *Proc SPIE Smart Structures/NDE*, vol. 10971, Mar. 4-8, Denver, CO, doi: 10.1117/12.2514354

59 **2019** Alzeyadi, A., J. Hu, **T. Yu**, Electromagnetic sensing of a subsurface metallic object at different depths, In: *Proc SPIE Smart Structures/NDE*, vol. 10971, Mar. 4-8, Denver, CO, doi: 10.1117/12.2514460

60 **2019** Alzeyadi, A., J. Hu, **T. Yu**, Detecting underground metallic objects of different sizes using synthetic aperture radar, In: *Proc SPIE Smart Structures/NDE*, vol. 10971, Mar. 4-8, Denver, CO, doi: 10.1117/12.2514480

61 **2019** **Yu, T.**, A. Alzeyadi, J. Hu, Q. Tang, C. Ingemi, Subsurface moisture characterization for sustainable concrete structures using imaging radar, In: *AIP Conference Proceedings* 2101, 110001; doi: /10.1063/1.5099838

62 **2020** **Yu, T.**, S. Vinayaka, Quantification of surface crack depth in concrete panels using 1.6 GHz GPR images, In: *Proc SPIE Smart Structures/NDE*, vol. 11380, April 27~May 8, doi: 10.1117/12.2558952

63 **2020** **Yu, T.**, J. Wang, H. Gandhi, Q. Tang, Detection of ground-motion-induced pipeline deformation using BOTDR measurements, In: *Proc SPIE Smart Structures/NDE*, vol. 11380, April 27~May 8, doi: 10.1117/12.2559131

64 **2021** Alzeyadi, A., **T. Yu**, Remote moisture quantification of concrete using SAR images and the K-R-I transform, In: *Proc SPIE Smart Structures/NDE*, vol. 1159207, March 22~26, doi: 10.1117/12.2582429

65 **2021** Alzeyadi, A., **T. Yu**, Determination of critical contour area in SAR images of concrete for subsurface moisture sensing, In: *Proc SPIE Smart Structures/NDE*, vol. 1159114, March 22~26, doi: 10.1117/12.2582431

66 **2021** **T. Yu**, A. Sinha, J. Wei, R. Bates, T. Dhant, H. Gandhi, Short-term mechanical strength prediction of ultra-high performance concrete using noncontact synthetic aperture radar

imaging, In: *Proc SPIE Smart Structures/NDE*, vol. 1159207, March 22~26, doi: 10.1117/12.2584809

67 **2021** Biondi, A.M., X. Guo, J. Zhou, Q. Tang, H. Ghandi, B. Goplan, T. Hanna, J. Ivey, **T. Yu**, X. Wang, Optical fiber sensing textile for temperature and strain distributed measurement, In: *Proc SPIE Smart Structures/NDE*, vol. 1159207, March 22~26, doi: 10.1117/12.2595377

HONORS AND AWARDS

Recipient, ASNT Faculty Award, American Society of Nondestructive Testing (ASNT), Columbus, OH, **2021**

Faculty Advisor, Integrated University Program (IUP), Student recipient: Mr. Ronan Bates, Idaho Operations Office, Department of Energy (DOE), Washington, D.C., **2020**

Donald Leitch Award (for outstanding research performance), Department of Civil and Environmental Engineering, UMass Lowell, **2017**

Faculty Advisor, Integrated University Program (IUP), Student recipient: Mr. Taiichi Ash, Idaho Operations Office, Department of Energy (DOE), Washington, D.C., **2016**

Faculty Advisor, Molitoris Leadership Scholarship for Undergraduates, Student recipient: Ms. ThetMyatNoe Sein, WTS (Advancing Women in Transportation), Boston Chapter, MA, **2016**

Faculty Advisor, Integrated University Program (IUP), Student recipient: Mr. Viet Le, Idaho Operations Office, DOE, Washington, D.C., **2015**

Faculty Advisor, The Lawrence Evangelical Church (LEC) Community Service Scholarship, Student recipient: Mr. Thu Ya, Lawrence Evangelical Church, Lawrence, MA, **2014**

Faculty Advisor, The ASNT Undergraduate Fellowship (student recipient: Mr. Viet Le), Student recipient: Mr. Viet Le, American Society of Nondestructive Testing (ASNT), Columbus, OH**, 2014**

Fellow, Japan Society for the Promotion of Science (JSPS), Tokyo, Japan, **2010**

Cambridge *Who's Who*, Cambridge, MA, **2010**

Outstanding Alumni of 2009, National Yunlin University of Science and Technology, Yunlin, Taiwan, **2009**

Marquis *Who's Who in America*, New Providence, NJ, **2009**

Recipient, ASNT Fellowship Award, American Society of Nondestructive Testing (ASNT), Columbus, OH, **2008**

Graduate Research Assistantship, National Science Foundation, **2003-2008**

Metropolitan *Who's Who 2006*, New York, NY, **2006**

Overseas Graduate Scholarship, Ministry of Education, Taiwan, **2005-2006**

The Schoettler Scholarship, Department of Civil and Environmental Engineering, Massachusetts Institute of Technology, **2004**

Graduate Fellowship, Department of Civil Engineering, National Central University, **1996-1998**

Undergraduate Scholarship, STT Foundation of Cultural and Education, Taiwan, **1993**

Outstanding Undergraduate Fellowship, Foundation of Taipei Construction Hall, Taiwan, **1992-1993**

PROFESSIONAL ACTIVITIES

1. Professional Association Participation

Professional Society Committee Service

Chair, *SPIE (International Society for Optics and Photonics) Smart Structures/NDE Symposium, Conference*, **2013, 2016, 2020, 2021**

Co-chair, *U.S.DOT University Transportation Center (UTC) Region 1 Annual Conference,* TIDC (Transportation Infrastructure Durability Center), **2020**

Co-chair, *SPIE Smart Structures/NDE Symposium*, **2009-present**

Member, Executive Committee, *SPIE Smart Structures/NDE Symposium,* **2012-present**

Member, Program Committee, *SPIE Smart Structures/NDE Symposium,* **2009-present**

Member, Committee 228 Nondestructive Testing of Concrete, *American Concrete Institute (ACI)*, **2011-present**

Member, Structural Engineering Institute (SEI), *American Society of Civil Engineers (ASCE)*, **2010-present**

Professional Society Membership

Fellow, Japan Society for the Promotion of Science (JSPS), **2010-present**

Senior Member, The International Society for Optical Engineering (SPIE), Bellingham WA, **2018-present**

President, New England Association of Chinese Professionals, Boston, MA, **2012~2014**

Board Member, Board of Directors, Chinese Institute of Engineers Greater New York Chapter (CIE-GNYC), Millwood, NY, **2021~present**

Board Member, New England Association of Chinese Professionals, Boston, MA, **2014~2016**

Member, American Concrete Institute (ACI)

Member, American Society of Civil Engineers (ASCE)

Member, American Society for Nondestructive Testing (ASNT)

Member, The Institute of Electrical and Electronics Engineers (IEEE)

Member, The Society of Experimental Mechanics (SEM)
Member, American Association for the Advancement of Science (AAAS)
Member, American Chemistry Society (ACS)
Member, Instrumentation, Systems, and Automation Society (ISA)
Member, Sigma Xi

Journal Editorial Board Memberships and Conference Proceeding Ediorships

Editor*, Proceedings of SPIE Smart Structures/NDE Symposium,* **2012-present (except 2015)**
Subject editor, *Materials*, **2020-present**
Member, Editorial Board, *BSCE Civil Engineering Practice Journal*, **2020-present**
Member, Editorial Board, *Journal of Multiscale Science and Engineering*, **2018-present**
Guest editor*, Recent Theory and Applications on Inverse Problems,* **2013-2015**

Journal Paper and Proposal Reviewer

Reviewer, *Civil Engineering Practice***,** Journal of Boston Society of Civil Engineers*,* **2020-present**
Reviewer, *IEEE Transactions on Instrumentation & Measurement***, 2020-present**
Reviewer, *Measurement,* **2019-present**
Reviewer, *NDT&E International*, **2018-present**
Reviewer, *Construction and Building Materials*, **2018-present**
Reviewer, *Intelligent Material Systems and Structures*, **2018-present**
Reviewer, *International Journal of Engineering Science and Technology*, **2018-present**
Reviewer, *Journal of Applied Remote Sensing*, **2018-present**
Reviewer, *Structures and Infrastructure Engineering,* **2016-present**
Reviewer, *Journal of Research in Nondestructive Evaluation (RNDE)*, **2016-present**
Reviewer, *ACI Structural and Materials Journals,* **2014-present**
Reviewer, *Sensors*, **2013-present**
Reviewer, *ASCE Journal of Materials in Civil Engineering*, **2013-present**
Reviewer, *IEEE Transactions of Mechatronics*, **2013-present**
Reviewer, *Journal of Smart Structures and Systems*, **2012-present**
Reviewer, *Journal of Engineering Computations*, **2012-present**
Reviewer, *Journal of Intelligent Material Systems and Structures*, **2012-present**
Reviewer*, Journal of Materials,* **2012-present**
Reviewer, *ASTM Journal of Testing and Evaluation*, **2011**
Reviewer, *International Journal of Physical Sciences*, **2011**

Reviewer, *ASCE Journal of Geotechnical and Geoenvironmental Engineering*, **2010-present**

Proposal Reviewer, National Science Centre, Królewska, Kraków, Poland, **2021-present**

Proposal Reviewer, *Engineer Research and Development Center (ERDC),* U.S. Army, Vicksburg, MS, **2019-present**

Proposal Reviewer, *Division of Civil, Mechanical, and Manufacturing Innovation (CMMI)*, National Science Foundation (NSF), Washington, D.C., **2016-present**

Proposal Reviewer, *Postdoctoral Program*, National Aeronautics and Space Administration (NASA), Washington, D.C., **2016-present**

Proposal Reviewer, Canada Foundation for Innovation, Ottawa, Ontario, Canada, **2016~present**

Proposal Reviewer, *Nuclear Energy University Programs (NEUP) R&D Program*, Department of Energy (DOE), Washington, D.C., **2011-present**

Proposal Reviewer, *Research and Education Awards Program (REAP)*, National Aeronautics and Space Administration (NASA), Washington, D.C., **2013-present**

Proposal Reviewer*, Consolidated Innovative Nuclear Research (CINR) Program,* Nuclear Energy University Program Integration Office, Department of Energy, Washington, D.C., **2015-present**

Book and Book Chapter Reviewer

Book reviewer, *Structural Stability: Theory and Practice*, Wiley, New York, NY, **2019**

Book reviewer, *Sustainable Engineering and Construction*, Prentice Hall, Upper Saddle River, NJ, **2012**

Book reviewer, *Sustainable Building Practices, Technologies and Systems*, Prentice Hall, Upper Saddle River, NJ, **2009**

2. Professional Honors and Awards

Faculty Advisor, Integrated University Program (IUP), Student recipient: Mr. Ronan Bates, Idaho Operations Office, Department of Energy (DOE), Washington, D.C., **2020**

Donald Leitch Award (for outstanding research performance), Department of Civil and Environmental Engineering, UMass Lowell, **2017**

Faculty Advisor, Integrated University Program (IUP), Student recipient: Mr. Taiichi Ash, Idaho Operations Office, Department of Energy (DOE), Washington, D.C., **2016**

Faculty Advisor, Molitoris Leadership Scholarship for Undergraduates, Student recipient: Ms. ThetMyatNoe Sein, WTS (Advancing Women in Transportation), Boston Chapter, MA, **2016**

Faculty Advisor, Integrated University Program (IUP), Student recipient: Mr. Viet Le, Idaho Operations Office, DOE, Washington, D.C., **2015**

Faculty Advisor, The Lawrence Evangelical Church (LEC) Community Service Scholarship, Student recipient: Mr. Thu Ya, Lawrence Evangelical Church, Lawrence, MA, **2014**

Faculty Advisor, The ASNT Undergraduate Fellowship (student recipient: Mr. Viet Le), Student recipient: Mr. Viet Le, American Society of Nondestructive Testing (ASNT), Columbus, OH**, 2014**

Cambridge *Who's Who*, Cambridge, MA, **2010**

Outstanding Alumni of 2009, National Yunlin University of Science and Technology, Yunlin, Taiwan, **2009**

Marquis *Who's Who in America*, New Providence, NJ, **2009**

The ASNT 2008 Fellowship Award, American Society of Nondestructive Testing (ASNT), Columbus, OH, **2008**

Graduate Research Assistantship, National Science Foundation, **2003-2008**

Metropolitan *Who's Who 2006*, New York, NY, **2006**

Overseas Graduate Scholarship, Ministry of Education, Taiwan, **2005-2006**

The Schoettler Scholarship, Department of Civil and Environmental Engineering, Massachusetts Institute of Technology, **2004**

Graduate Fellowship, Department of Civil Engineering, National Central University, **1996-1998**

Undergraduate Scholarship, STT Foundation of Cultural and Education, Taiwan, **1993**

Outstanding Undergraduate Fellowship, Foundation of Taipei Construction Hall, Taiwan, **1992-1993**

3. Non-teaching Activity

Consultant, *Investigation of the Collapse of the Pemberton Mill* (1860), Lawrence Public Library, Lawrence, MA, **2009-2010**

INSTRUCTION RELATED ACTIVITY

1. Teaching

Undergraduate Courses Taught (Number of years taught)

ENGN2050 *Statics* (since 2021)

ENGN2070 *Dynamics* (since 2010; 11 times)

CIVE3110 *Engineering Materials Laboratory* (jointly with Prof. D. Leitch) (2011~2014; 4 times)

Graduate Courses Taught

CIVE5010 *Civil Engineering Research Seminar* (2016~2021; 10 times)

CIVE5050 *Concrete Materials* (2009~2017; 5 times)

CIVE5110 *Inspection and Monitoring of Civil Infrastructure* (since 2009; 7 times)

CIVE5120 *Structural Stability* (since 2009; 6 times)

CIVE5570 *Structural Dynamics* (since 2008; 7 times)

Supervised Student Thesis – Thesis Advisor

Year	Name / Dept.	Degree	Thesis Title
2010	Burak Boyaci	Master's	Geometric Analysis of Finite Difference Time Domain Simulation for Damage Assessment in Ground Penetrating Radar Applications
2011	Ibrahim Cagatay Solak	Master's	Dielectric Measurement and Modeling of Cement Paste Specimens
2011	Jeremiah Otchere-Nyarko	Master's	Model Test and Numerical Simulation for the Structural Health Monitoring of a Truss Bridge
2011	Alice Chao	Master's	Measurement and Modeling of Hydration Heat in Concrete Specimens
2013	Carlos Jaquez	Master's	Analysis of Accelerated Corrosion Experiments on Reinforced Concrete Slabs using Half-cell Potential Measurements
2013	Shafique Ahmed	Master's	Mechanical Analysis of Reinforced Concrete Beams for Structural Health Monitoring
2013	Hao Liu	Master's	Dielectric Modeling of Cement Paste and Mortar
2013	Justin Wilson	Master's	Artificially Accelerated Corrosion Test and Half-cell Potential Monitoring of Reinforced Concrete Slabs
2014	Qixiang Tang	Master's	Dynamics Analysis of Deteriorated Light Pole Structures
2015	Ross Gladstone	Master's	Ranging and Sizing of Concrete Targets using Radar Images
2016	Viet Le	Master's	Detection and Quantification of Damage from ASR Gels using Multiphysical Nondestructive Evaluation
2017	Nicolas D'Amico	Master's	Modeling Half-Cell Potentials and Their Relationship to Corrosion of Reinforcing Steel
2017	Harsh Gandhi	Master's	Structural Health Monitoring of Pipe Specimens using Strain Gauges and BOTDR
2019	Christopher Ingemi	Master's	Electromagnetic Characterization of Structural Lumber using Synthetic Aperture Radar Images
2020	Amy Kearns	Master's	Structural Analysis and Design of a Building-type Structure (*report*)
2020	Qixiang Tang	Ph.D.	Early-stage Corrosion Detection of Reinforced

			Concrete Structures Using Ultrasonic Waves Generated by an Embedded Fiber Optical Transmitter
2020	Ahmed Alzeyadi	Ph.D.	Quantifying Moisture and Chloride Contents in Concrete Panels using Synthetic Aperture Radar Imaging

Supervised Student Thesis – Thesis Committee

Year	Name / Dept.	Degree	Thesis Title
2010	David Cloutier / Mechanical Engineering	Master's	Investigation of Various System Model Decoupling Techniques
2012	Timothy Marinone / Mechanical Engineering	Master's	Effect of Computational Nonlinear Dynamics Analysis using Modal Modification Response Technique
2012	Christopher Page / Mechanical Engineering	Master's	Passive Noise Reduction using Modally Enhanced Dynamic Absorber
2013	Christopher Nonis / Mechanical Engineering	Master's	Structural Health Monitoring of Bridges using Three-dimensional Digital Image Correlation
2014	Xiaotian Zou / Electrical and Computer Engineering	Ph.D.	Photoacoustic Sensing of Fiber Optic Sensors in Medical Applications

Supervised Undergraduate Research – Advisor

Year	Name / Dept.	Program
2008 ~ 2009	Samuel T. Talbot / Civil and Environmental Engineering	NIST VOTERS Project
2008 ~ 2011	Justin Wilson / Civil and Environmental Engineering	NIST VOTERS Project
2010	Alvaro L. Sosa / Civil and Environmental Engineering	NIST VOTERS Project
2010 ~ 2014	Eindra (Elena) Aung / Civil and Environmental Engineering	NIST VOTERS Project
2011 ~ 2013	Ross Gladstone / Civil and Environmental Engineering	NIST VOTERS Project
2011	Jamie Muntz / Civil and Environmental Engineering	Co-op Program
2011	Sarah Kurtzer / Civil and Environmental Engineering	Co-op Program

2012	Othman Belgrini / Civil and Environmental Engineering	NIST VOTERS Project
2012 ~ 2013	David Perloff / Civil and Environmental Engineering	NIST VOTERS Project
2012	Stephen D. Vaughan / Civil and Environmental Engineering	Co-op Program
2012	Luis A. Aguilar Navas / Civil and Environmental Engineering	USDOT RITA MRSS Project
2012 ~ 2015	Jason Chiang / Chemistry	AFRL Project
2013 ~ 2014	Viet Q. Le / Civil and Environmental Engineering	NIST VOTERS Project
2014 ~ 2015	David A. Salyer / Civil and Environmental Engineering	NIST VOTERS Project
2014 ~ 2016	Thu Ya / Civil and Environmental Engineering	USDOT RITA Project
2014 ~ 2018	Thet Myat Noe Sein / Civil and Environmental Engineering	NSF Project
2014 ~ 2018	Reny Yohana Lende Mere / Civil and Environmental Engineering	NSF Project
2016 ~ 2017	Kasey Mearls / Civil and Environmental Engineering	NSF Project
2014 ~ 2018	Christopher Ingemi / Civil and Environmental Engineering	NSF Project
2016 ~ 2017	Ruben Diaz / Civil and Environmental Engineering	NSF Project
2019 ~ present	Sophe Ying / Civil and Environmental Engineering	USDOT UTC Project
2019 ~ present	Yaneliz Garcis Ruiz / Civil and Environmental Engineering	USDOT UTC Project
2019 ~ present	Tiana Robinson / Civil and Environmental Engineering	USDOT UTC Project
2021 ~ present	Farel Adelson / Civil and Environmental Engineering	USDOT UTC Project

2. Other Activity and Accomplishments Related to the Instruction Function

Teaching Assistant, 2004-2005, 2007-2008, M.I.T., Cambridge, MA

Undergraduate course: 1.051 *Structural Engineering Design of Concrete Structures*

Graduate course: 1.054/1.541 *Mechanics and Design of Concrete Structures*

(M.I.T. OpenCourseWare (OCW) link: http://ocw.mit.edu/OcwWeb/Civil-and-Environmental-Engineering/ 1-054Spring2004/CourseHome/index.htm)

Teaching Assistant, 1996-1998

National Central University, Chungli, Taiwan
Undergraduate courses: *Engineering Mathematics* and *Dynamics*

PATENTS

1. **U.S. Patent** #20,090,222,221 / *System and Method for Detecting Damage, Defect, and Reinforcement in Fiber Reinforced Polymer-bonded Concrete Systems Using Far Field Radar*, shared with O. Buyukozturk and D. Blejer, Sep. 3, **2009**
2. **U.S. Patent Application #**62,521,099 **/** *Sensing Textiles,* shared with Nancy E. Brown, Sahas Rathi, Tzuyang Yu, Xingwei Wang, Pradeep Kurup, and Jackson A. Ivey, **2017**.

SERVICE

1. **Community Activities Related to Professional Field**

Service and Leaderships Provided to Local Community

Interviewee, WBZ NewsRadio, on "Transportation Infrastructure Durability Research at UMass Lowell," 01/31/**2019**

Interviewee, GoLocal TV, on "Sensing and Monitoring Techniques for Civil Infrastructure," 02/12/**2018**

Interviewee, Eagle Tribune Newspaper, on "Winter's Weight: Officials warn weekend rain will further burden roofs," 02/20/**2015**

Interviewee, CBS (Columbia Broadcasting Station) WBZ-TV, on "I-Team: Aging Light Poles – A Safety Concern on Mass. Roads," 10/31**2012**

President, *New England Association of Chinese Professionals*, Boston, MA, **2012-2014**

Advisor, *Federation of Taiwanese Student Association in New England (FTSANE)*, Boston, MA, **2011-present**

Judge, *Spirit of Innovation Awards (for K12 students)*, Conrad Foundation, Houston, TX, **2011, 2015**

Judge, Student Paper Competition, *SPIE Smart Structures/NDE Symposium*, San Diego, CA, **2009-2011**

Judge, Student Research Showcase, *Sigma Xi, The Scientific Research Society*, Research Triangle Park, NC, **2015**

2. **Committee Activities (Service on department, college or university committees)**

Associate Chair for Doctoral Studies, Department of Civil and Environmental Engineering, **2016~2021**

Faculty Search Committee (Structural Engineering), Chair, Department of Civil and Environmental Engineering, **2017-2018**

Faculty Search Committee (Environmental Engineering), Member, Department of Civil and Environmental Engineering, **2016-2017, 2018**

Thesis Project Committee, The Honors College, UML, **2015-present**

Department Library Liaison/Representative, UML Libraries, **2008-present**

Faculty Search Committee, Department of Civil and Environmental Engineering, **2011, 2012, 2013**

Faculty Search Committee, Department of Mechanical Engineering, **2013**

3. **Other Service to the University**

Faculty Senate, Department of Civil and Environmental Engineering, UMass Lowell, **2012-present**

Coordinator, *Review of Fundamentals of Engineering (EF) Exam*, **2010-2012**

Lecturer, *Review of Fundamentals of Engineering (FE) Exam*, **2010-2012**

Participant, *Open House Day*, **2008-present**

Director of Partnerships (Taiwan), International Partnerships & Exchange, Office of the Provost, **2011-present**

INVITED TALKS AND PRESENTATIONS (excluding conference presentations)

1 **2009** "*Introduction to Engineering*", Engineering Academy, Lowell High School, Lowell, MA, March 6

2 **2009** "*Distant radar subsurface imaging for reinforced concrete structures*," Millitech, Inc., Northampton, MA, May 28

3 **2009** "*A distant radar nondestructive evaluation technique for the in-depth damage detection of multi-layer concrete structures*," Department of Physics, University of Rhode Island, Kingston, RI, September 25

4 **2009** "*A distant imaging technique for FRP-concrete structures using inverse aperture radar*," Department of Civil Engineering, National Central University, Chungli, Taiwan, December 22

5 **2009** "*Development of a far-field inspection method for concrete structures*," Department of Construction Engineering, National Yunlin University of Science and Technology Yunlin, Taiwan, December 23

6 **2009** "*A distant nondestructive testing method for the inspection of concrete structures*," Department of Civil Engineering, Chung Yuan Christian University, Yunlin, Taiwan, December 25

7 **2010** "*Introduction to Structural Inspection in Civil Engineering*", Engineering Academy, Lowell High School, Lowell, MA, March 4

8 **2011** "*Failures of Civil Infrastructure*," AIST, Tsukuba, Japan, January 11

9 **2011** "*Design, Manufacturing and Application of Structural Concrete*," AIST, Tsukuba, Japan, January 11

10 **2011** "*Far-field Airborne Radar Nondestructive Testing (FAR NDT)*," Japan Radio Company (JRC), Mitaka, Japan, January 13

11 **2011** "*Far-field Airborne Radar Nondestructive Testing (FAR NDT)*," Public Works Research Institute (PWRI), Tsukuba, Japan, January 14

12 **2011** "*Far-field Airborne Radar Nondestructive Testing (FAR NDT)*," AIST, Tsukuba, Japan, January 17

13 **2011** "*Engineering Education – Perspective from a MIT Alumni*," AIST, Tsukuba, Japan, January 18

14 **2011** "*Introduction to Finite Difference Time Domain Methods*," National Institute of Advanced Industrial Science and Technology (AIST), Tsukuba, Japan, January 19 & 18

15 **2011** "*Far-field Airborne Radar Nondestructive Testing Technique for Strengthened/ Repaired Concrete Structures Using Fiber Reinforced Polymers*," Tamkang University, Taiwan, January 21

16 **2011** "*Remote Surface and Subsurface Sensing of Multilayer Concrete Systems*," Department of Electrical and Computer Engineering, UMass Dartmouth, North Dartmouth, MA, February 4

17 **2011** "*Synthetic Aperture Radar Imaging for the Distant Inspection of Multi-layer GFRP-concrete Structures*," National Taipei University of Technology (NTUT), Taipei, Taiwan, October 26

18 **2012** "*Integrated multimodal sensor for remote sensing of highway bridges*," TRB (Transportation Research Board) 91st Annual Meeting, January 22, Washington, D.C.

19 **2012** "*Advanced Sensing Technologies for the Condition Assessment of Civil Infrastructure,*" 1.562 High-Performance Structures MEng Project, Department of Civil and Environmental Engineering, Massachusetts Institute of Technology, Cambridge, MA, February 29

20 **2013** "*Multi-Modal Remote Sensing System for Bridge Inspection and Monitoring*," New Hampshire Society of Professional Engineers (NHSPE), Bedford, NH, February 21

21 **2013** "*Theory and Application of Dielectric Materials*," College of Engineering, National Chung-Hsing University (NCHU), Taichung, Taiwan, Aug. 15-19

22 **2013** "*Multiphysical Investigation of a Reinforced Concrete Beam using Radar and Digital Image Correlation*," Department of Construction Engineering, National Yunlin University of Science and Technology, Yunlin, Taiwan, August 21

23 **2013** "*Advanced Sensing Technologies for the Condition Assessment of Civil Infrastructure*," Department of Computer Sciences, Tufts University, October 30

24 **2014** "*Multiphysical Inspection and Monitoring of Aging Civil Infrastructure Systems*," iRobot Corporation, Burlington, Massachusetts, January 28

25 **2014** "*Radar Imaging of Concrete Structures*," Massachusetts Department of Transportation (MassDOT), Boston, Massachusetts, September 24

26 **2015** "*Quantitative Sensing of Bridges, Railways, and Tunnels with Autonomous Unmanned Aerial Vehicles*," Simpson, Gumpertz, and Heger (SGH) Corporation, Waltham, Massachusetts, January 8

27 **2015** "*Condition Assessment of Concrete Structures using Radar Imaging*," City University of Hong Kong, Hong Kong, China, November 17

28 **2015** "*Electromagnetic Characterization of Concrete Structures using Synthetic Aperture Radar Imaging*," National Taiwan University, Taipei, Taiwan, November 24

29 **2016** "*Quantitative Sensing of Bridges with Autonomous Unmanned Aerial Vehicles,*" Sensing Technologies for Transportation Applications Workshop, Transportation Research Board (TRB), Washington, D.C., January 10

30 **2016** "Quantitative sensing of bridges, railways, and tunnels with automatous unmanned aerial vehicles," Nobis Engineering, Inc., Lowell, MA, March 15

31 **2016** "*Surface and Subsurface Sensing of Bridges using Unmanned Aerial Vehicle with Radar and Image Sensors*," The 29th Annual Symposium on the Application of Geophysics to Engineering and Environmental Problems (SAGEEP), Session: Highway Geophysics, March 22

32 **2016** "*Condition Assessment for Resilient and Sustainable Civil Infrastructure*," National Society for Black Engineers 42nd Annual Convention, Boston, Massachusetts, March 25

33 **2016** "*Non-Destructive Evaluation of Moisture Content inside Cementitious Composites using Synthetic Aperture Radar*," The 7th Advances in Cement-Based Materials (Cements 2016), The American Ceramic Society, Northwestern University, Evanston, IL, July 10-13

34 **2016** "*Radar Imaging of Construction Materials*," Summer Workshop of Engineering NDE&SHM Technologies in Civil Infrastructures, National Kaohsiung University of Applied Sciences, Kaohsiung, Taiwan, July 22

35 **2016** "Imaging Radar Sensors for Surface and Subsurface Sensing of Concrete Structures," Taiwan Construction Research Institute (TCRI), Taipei, Taiwan, July 25

36 **2016** "*Portable Imaging Radar for Surface and Subsurface Sensing of Concrete Structures*," Chaoyang University of Technology (CYUT), Taichung, Taiwan, July 25

37 **2016** "*Inspection and Monitoring of Engineering Structures*," College of Engineering, National Chung-Hsing University (NCHU), Taichung, Taiwan, July 26-28

38 **2017** "*Photonically Tunable Electric Permittivity of Organic Metamaterials*," National Institute of Standards and Technology (NIST), Gaithersburg, MD, Jan. 11

39 **2017** "*Imaging Radar for Construction Materials*," National Institute of Standards and Technology (NIST), Gaithersburg, MD, Jan. 11

40 **2017** "*Imaging Radar and DIC Sensors on a UAV Platform for Bridge Inspection*," Transportation Research Board (TRB) Workshop on Sensing Technologies for Transportation Applications, Washington DC, Jan. 12

41 **2017** "*Surface abd Subsurface Imaing using Synthetic Aperture Radar and Digital Image Correlation for Bridge Inspection*," Geophysical Survey Systems, Inc. (GSSI), Nashua, NH, Jan. 31

42 **2017** "*Bridge Inspection and Monitoring usin UAV with Radar and Optical Sensors*," the 30th Transportation Forum, Department of Civil and Environmental Engineering, University of Rhode Island, Kingston, RI, Oct. 26

43 **2017** "*Ground Penetrating Radar and Synthetic Aperture Radaring Imaging for Surface and Subsurface Sensing*," Space Physics Seminar Series, Department of Physics, UMass Lowell, Lowell, MA, Nov. 2

44 **2017** "*Autonomous Remote Sensing of Bridges using UAV with Radar and Optical Sensors*," Department of Civil and Environmental Engineering, Western New England University, Springfield, MA, Nov. 21

45 **2017** "*Civil Infrastructure Inspection and Monitoring using Mobile Radar and Optical Sensors*," College of Mechanical and Electrical Engineering, National Taipei University of Technology, Taipei, Taiwan, Dec. 21.

46 **2017** "*Microwave Characterization of Multi-phase Dielectrics for Condition Assessment*," Department of Agricultural Chemistry, National Taiwan University, Taipei, Taiwan, Dec. 22.

47 **2018** "*Subsurface Condition of Concrete Structures using Imaging Radar*," Conversation Starters on Forensics, Saab Center Atrium, UMass Lowell, Lowell, MA, Apr. 4.

48 **2018** "*Modeling Structural Deformation and Interpreting Measurements,*" Workshop on Sensing Textiles, Saint-Gobain North America, Northborough, MA, Oct. 22.

49 **2018** "*Electromagnetic Detection and Identification of Concrete Cracking in Highway Bridges*," The 1st TIDC Annual Conference, Marriott Portsmouth, NH, Nov. 8.

50 **2018** "*Subsurface Moisture Characterization of Multiphase Cementitious Composites using Synthetic Aperture Radar*," (invited talk) Department of Physics, UMass Lowell, Lowell, MA, Nov. 14.

51 **2019** "*Remote Sensing using Synthetic Aperture Radar Imaging for Subsurface Sensing*," Workshop on Highway Research, University Crossing, Lowell, MA, Feb. 27.

52 **2019** "*Strain-Based Health Monitoring for Bridges*," Seminar Talk for visitors from Saint-Gobain North America and American Railroad Engineers (ARE) Corp., Lowell, MA Mar. 14.

53 **2019** "*Engineering Education – The MIT Example*," Seminar Talk, SERG Meeting, Department of Civil and Environmental Engineering, Lowell, MA, Mar. 28.

54 **2019** "*Research Methodology – A Very Brief Introduction*," Seminar Talk, SERG Meeting, Department of Civil and Environmental Engineering, Lowell, MA, Mar. 28.

55 **2019** "*Microwave Concrete Diagnostics*," Seminar Talk for visitors from Asahi Kasei Advance Corp. (Tokyo, Japan), Perry Hall 315, UMass Lowell, Lowell, MA Sep. 12.

56 **2019** "*About Portland Cement Concrete: Past, Present, and Future*," (keynote speech), Annual Conference of NEACP (New England Association of Chinese Professionals), MIT, Cambridge, MA, Nov. 26.

57 **2019** "Imaging of Concrete Materials and Structures using Synthetic Aperture Radar," (invited talk), Department of Civil Engineering, National Cheng Kung University (NCKU), Tainan, Taiwan, Dec. 19.

58 **2019** "*Multimodal Design of Structural Health Monitoring Systems for Civil Infrastructures*," The 2019 Asian Pacific Congress on Computation Mechanics (APCOM), ICC, Taipei, Taiwan, Dec. 20.

59 **2019** "*Development of a Novel Sensing Textile System for Pipeline Monitoring*," College of Engineering, Chung Yuan Christian University (CYCU), Chungli, Taiwan, Dec. 20.

60 **2020** "*Electromagnetic Detection and Identification of Concrete Cracking in Highway Bridges*," The 2nd TIDC Annual Conference, virtual meeting, Aug. 12.

61 **2020** "*Remote Radar Inspection of Concrete Bridges for Moisture Characterization and Crack Depth Detection*," 2020 VTrans Research and Innovation Symposium, virtual meeting, Sep. 9.

62 **2020** "*Sensing Textiles for Civil Infrastructure Monitoring of Pipelines and Bridges*," AFFOA Virtual Member Event (VME), virtual meeting, Oct. 8.

63 **2020** "*Sensing Textiles for Civil Infrastructure Monitoring of Pipelines and Bridges*," The 33rd Rhode Island Transportation Forum, University of Rhode Island, virtual meeting, Oct. 30.

64 **2021** "*Radar Imaging of Concrete Structures for Crack Characterization*," online meeting, Geophysical Survey Systems, Inc. (GSSI), Nashua, NH, Jan. 14.

65 **2021** "*Electromagnetic Detection and Identification of Concrete Cracking in Highway Bridges*," online meeting, Advanced OEM Solutions, West Chester, OH, Feb. 25.

66 **2021** *"Synthetic Aperture Radar Imaging and Image Analysis in Civil Engineering – Challenges and Opportunities*," online meeting, Chinese Institute of Engineers (CIE) – Greater New York Chapter (GNYC), Apr. 3.

67 **2021** "*Nondestructive Investigation of Concrete Deterioration using Radar and Acoustic Sensors*," online meeting, AOS-NDT Advanced OEM Solution, Apr. 8.

68 **2021** "*Portable Synthetic Aperture Radar Imaging Sensor for UAV Bridge Inspections*," online meeting, U.S.DOT UTC TIDC Annual Conference, UMaine, Jul. 28.

69 **2021** "*Distributed Sensing Textile for Bridge Monitoring*," online meeting, U.S.DOT UTC TIDC Annual Conference, UMaine, Jul. 29.

70 **2021** "*Development of a System-Level Distributed Sensing Technique for Long-Term Monitoring of Concrete and Composite Bridges*," online meeting, U.S.DOT UTC TIDC Annual Conference, UMaine, Jul. 29.

71 **2021** "*Portable Synthetic Aperture Radar Imaging Sensor for UAV Bridge Inspections*," online meeting, AI Engineers, Aug. 9 & 12.