

# Tung-Yu Wu, PhD, SE

Assistant Professor, Department of Civil Engineering, National Taiwan University  
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## EDUCATION

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<b>University of Michigan</b> , Ann Arbor, MI	
<b>Ph.D. in Civil Engineering</b>	2019/05
Dissertation: "Seismic Collapse Resilience of Buildings with Steel Moment Resisting Frames"	
<b>M.S.E. in Aerospace Engineering</b>	2018/04
<b>National Taiwan University</b> , Taiwan	
<b>M.S. in Structural Engineering</b>	2010/06
Thesis: "Research and Application of RC Structures Using Equivalent Linear System"	
<b>B.S. in Civil Engineering</b>	2008/06

## FULL-TIME EMPLOYMENT

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<b>Assistant Professor</b> , Department of Civil Engineering, National Taiwan University, Taiwan	2019/08-Present
<b>Structural Engineer</b> , Sinotech Engineering Consultants Co, Ltd., Taiwan	2012/03-2014/05
<b>Engineer Intern</b> , Ruentex Engineering & Construction Co., Ltd., Taiwan	2008/07-2008/08

## RESEARCH INTERESTS

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Seismic Design of Steel Structures  
Structural Collapse Simulation  
Seismic Loss Assessment

## RESEARCH PROJECTS

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- Influence of Initial Geometric Imperfection on Collapse Behavior of Cold-Formed Hollow Structural Steel Columns under Seismic Loading**, Principal Investigator, funded by MOST, Taiwan 2021/08-2023/07
  - Practical Design and Experimental Study of Subwavelength Seismic Metamaterial Structures**, Co-Principal Investigator, funded by the Ministry of Science and Technology (MOST), Taiwan 2021/08-2024/07
  - Analytical Study of Crack Growth in Railway Crossings under High Wheel-Rail Impacts**, Co-Principal Investigator, funded by the Taipei Rapid Transit Corporation (TRTC) 2021/03-2022/05
  - Evaluation and Improvements of Seismic Resilience for Steel Building Structures in Communities**, Principal Investigator, funded by MOST, Taiwan 2020/01-2021/12

## ENGINEERING CONSULTANCE

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- Tsengwen reservoir risk analysis**, for Sinotech Engineering Consultants, Ltd, and Southern Region Water Resources Office, Water Resources Agency, Ministry of Economic Affairs 2021/07-2021/10

## CERTIFICATIONS

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Structural Engineer, Taiwan	2012/03
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## HONORS and AWARDS

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<b>Raymond C. Reese Research Prize</b> , American Society of Civil Engineers	2019/04
<b>Rackham International Student Fellowship</b> , University of Michigan, Ann Arbor	2015–2016
<b>Government Scholarship to Study Abroad</b> , Taiwan Ministry of Education	2015–2017
<b>Engineering and Technology Scholarship</b> , China Engineering Consultants, Inc., Taiwan	2009
<b>Tseng Yang-Fu Scholarship</b> , Chinese Institute of Civil & Hydraulic Engineering, Taiwan	2007

## SELECTED PUBLICATIONS AND PRESENTATIONS

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### Journal Publications

- Sediak, O. A.\*, **Wu, T.-Y.**, McCormick, J., and El-Tawil, S. (2022). "Prediction of Seismic collapse behavior of deep steel columns using Machine learning." *Structures*, 40. <https://doi.org/10.1016/j.istruc.2022.04.021>
- Sediak, O. A., **Wu, T.-Y.\***, Chang, T.-H., McCormick, J., and El-Tawil, S. (2021). "Measurement, Characterization, and Modeling of Initial Geometric Imperfections in Wide-Flange Steel Members Subjected to Combined Axial and Cyclic Lateral Loading." *J. Struct. Eng.*, 147 (9): 04021120. [https://doi.org/10.1061/\(ASCE\)ST.1943-541X.0003086](https://doi.org/10.1061/(ASCE)ST.1943-541X.0003086).
- **Wu, T.-Y.\***, El-Tawil, S., and McCormick, J. (2020). "Influence of Seismic Design Evolution on the Seismic Collapse Behavior and Losses of Prototype Steel Buildings with Moment Resisting Frames." *J. Struct. Eng.*, 146 (9): 04020177. [https://doi.org/10.1061/\(ASCE\)ST.1943-541X.0002743](https://doi.org/10.1061/(ASCE)ST.1943-541X.0002743)
- Sediak, O. A.\*, **Wu, T.-Y.**, McCormick, J., and El-Tawil, S. (2020). "Collapse Behavior of HSS Columns Under Combined Axial and Lateral Loading." *J. Struct. Eng.*, 146 (6): 04020094. [https://doi.org/10.1061/\(ASCE\)ST.1943-541X.0002637](https://doi.org/10.1061/(ASCE)ST.1943-541X.0002637).
- **Wu, T.-Y.\***, El-Tawil, S., and McCormick, J. (2019). "Effect of cyclic flange local buckling on the capacity of steel members." *Eng. Struct.*, 200. <https://doi.org/10.1016/j.engstruct.2019.109705>.
- **Wu, T.-Y.\***, El-Tawil, S., and McCormick, J. (2018). "Seismic collapse response of steel moment frames with deep columns." *J. Struct. Eng.*, 144 (9): 04018145. [https://doi.org/10.1061/\(ASCE\)ST.1943-541X.0002150](https://doi.org/10.1061/(ASCE)ST.1943-541X.0002150).
- **Wu, T.-Y.\***, El-Tawil, S., and McCormick, J. (2018). "Highly ductile limits for deep steel columns." *J. Struct. Eng.* 144 (4): 04018016. [https://doi.org/10.1061/\(ASCE\)ST.1943-541X.0002002](https://doi.org/10.1061/(ASCE)ST.1943-541X.0002002).
- Fogarty, J.\*, **Wu, T.-Y.**, and El-Tawil, S. (2017). "Collapse Response and Design of Deep Steel Columns Subjected to Lateral Displacement." *J. Struct. Eng.*, 143 (9): 04017130. [https://doi.org/10.1061/\(ASCE\)ST.1943-541X.0001848](https://doi.org/10.1061/(ASCE)ST.1943-541X.0001848).

### Conference Publications and Oral Presentations

- Hung, C.-S., **Wu, T.-Y.**, Lee, C.-S., and Huang, Y.-N. (2022). "Development and Evaluation of Mixed Reality-Based Education Tools on Structural Mechanics." In *22nd International Conference on Construction Applications of Virtual Reality*. Seoul, South Korea.
- Wang, H.-C, **Wu, T.-Y.** (2022). "Collapse Assessment of Steel Buildings with Deep Columns under Tri-directional Seismic Excitations." In *15th World Congress on Computational Mechanics & 8th Asian Pacific Congress on Computational Mechanics*. Yokohama, Japan.
- Sediak, O. A., **Wu, T.-Y.**, McCormick, J., and El-Tawil, S. (2022). "Classification of Seismic Failure Modes of Deep Steel Columns Using Machine Learning." In *15th World Congress on Computational Mechanics & 8th Asian Pacific Congress on Computational Mechanics*. Yokohama, Japan.
- **Wu, T.-Y.**, Sediak, O. A, Chang, T.-H. (2022). "Collapse Fragility of Steel Special Moment Frames with Initial Geometric Imperfections." In *12th National Conference on Earthquake Engineering*, Salt Lake City, UT: Earthquake Engineering Research Institute.
- Chang, F.-H, **Wu, T.-Y.** (2020). "Evolution of Seismic Resilience of Steel Buildings in Taipei Basin." In *Conference on Theoretical and Applied Mechanics, CTAM 2020*. Yilan, Taiwan.
- Chang, T.-H., **Wu, T.-Y.**, Sediak, O. A., El-Tawil, S., and McCormick, J. (2020). "Influence of geometric initial imperfection on seismic collapse capacity of steel special moment frames with deep columns." In *15th National Conf. on Structural Engineering and 5th National Conf. on Earthquake Engineering*. Tainan, Taiwan.
- **Wu, T.-Y.** (2020). "Collapse Behavior of Steel Buildings with Deep Columns under Horizontal and Vertical Ground Motions." In *17th World Conf. on Earthquake Engineering*. Tokyo: International Association of Earthquake Engineering.
- **Wu, T.-Y.**, El-Tawil, S., and McCormick, J. (2019). "Influence of seismic design code evolution on the seismic losses and resilience of steel buildings." In *International Conference in Commemoration of 20th Anniversary of the 1999 Chi-Chi Earthquake*. Taipei, Taiwan: National Center for Research of Earthquake Engineering.
- **Wu, T.-Y.**, El-Tawil, S., and McCormick, J. (2019). "Seismic capacity of deep steel columns and their influence on the collapse response of steel special moment frames." In *International Conference in Commemoration of 20th Anniversary of the 1999 Chi-Chi Earthquake*. Taipei, Taiwan: National Center for Research of Earthquake Engineering.

- Sediek, O. A., **Wu, T.-Y.**, McCormick, J., and El-Tawil, S. (2019). “Seismic Behavior of HSS Columns Under Lateral Loading.” In *International Conference in Commemoration of 20th Anniversary of the 1999 Chi-Chi Earthquake*. Taipei, Taiwan: National Center for Research of Earthquake Engineering.
- **Wu, T.-Y.**, El-Tawil, S., and McCormick, J. (2018). “Ensuring highly ductile behavior for deep steel columns.” In *11th National Conf. on Earthquake Engineering*. Oakland, CA: Earthquake Engineering Research Institute.
- **Wu, T.-Y.**, El-Tawil, S., and McCormick, J. (2018). “Experimental study of cyclic flange local buckling.” In *Structures Congress 2018*, 49–57. Reston, VA: ASCE.
- **Wu, T.-Y.**, El-Tawil, S., and McCormick, J. (2018). “Seismic collapse response of a four-story steel special moment frame with deep columns.” In *Structures Congress 2018*, 213–221. Reston, VA: ASCE.
- **Wu, T.-Y.**, El-Tawil, S., and McCormick, J. (2017). “Effect of drift loading history on the collapse capacity of deep steel columns.” In *Structures Congress 2017*, 485–494. Reston, VA: ASCE.
- **Wu, T.-Y.**, El-Tawil, S., and McCormick, J. (2017). “Behavior of steel moment frames with deep column sections under seismic loading.” In *16th World Conf. on Earthquake Engineering*. Tokyo: International Association of Earthquake Engineering.