# Khiem T. Tran

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## EDUCATION

- **Doctor of Philosophy**, Civil Engineering (Geotechnical) August 2010
  University of Florida, Gainesville, FL
- **Master of Science**, Civil Engineering (Geotechnical) May 2008
  University of Florida, Gainesville, FL
- **Bachelor of Science**, Civil Engineering May 2001
  National University of Civil Engineering, Hanoi, Vietnam

## PROFESSIONAL EXPERIENCE

- Professor, Department of Civil and Coastal Engineering, University of Florida (08/2024 – present)
- Associate Professor, Department of Civil and Coastal Engineering, University of Florida (08/2018 –07/2024)
- Associate Professor: Department of Civil and Environmental Engineering, Clarkson University (02/2018 – 07/2018)
- Assistant Professor, Department of Civil and Environmental Engineering, Clarkson University (08/2012 – 02/2018)
- Post-Doctoral Associate, Department of Civil and Coastal Engineering, University of Florida (08/2010 – 07/2012)

## RESEARCH EXPERTISE

### Geophysical Testing and Subsurface Imaging

- Numerical modeling of mechanical and electromagnetic wave propagation
- Stochastic and deterministic inversion techniques, leveraging machine learning and AI
- Full waveform tomography, refraction tomography, migration, and surface wave methods
- Active and passive seismic surveys, ground-penetrating radar (GPR), and electrical resistivity methods

### Nondestructive Testing and Evaluation

- Full waveform tomography (FWT), synthetic aperture focusing technique (SAFT), reverse time migration (RTM), and time-lapse imaging methods
- Sonic and ultrasonic testing, ground-penetrating radar (GPR), and electrical resistivity techniques

### Soil-Foundation Dynamics

- Numerical modeling of soil–foundation interaction
- Dynamic testing for assessment of pile/shaft capacity and structural integrity

- Evaluation of pile freeze effects and Load and Resistance Factor Design (LRFD) resistance factors

**PUBLICATIONS**

**Key:**

Underline – senior or principal authors
Superscript G – Grad Student (Tran's advisee)
Superscript A – Alumni (Tran's former student)

**Peer-Reviewed Journals:** (Impact Factor is as of the published year)

1. Li Y., Chen R. [G], and **Tran K. T.** (2025) "Estimation of rebar diameter and depth using ultrasonic SH-waveform tomography with L-BFGS algorithm" *Measurement*, 256, 118419, https://doi.org/10.1016/j.measurement.2025.118419, (Impact Factor: 5.6).
2. Chen R [G], **Tran K. T**., McVay M, Yang K., and Tran M.N. [G] (2025) "Characterization of in-situ rock density with SH and Love-wave tomography: field data application", *Journal of Geophysics and Engineering,* https://doi.org/10.1093/jge/gxaf096 (Impact Factor: 1.7).
3. Yang B. [G], **Tran K.T**, Herrera R, and Shishlova K (2025) "Drilled Shaft Imaging with 2D Ultrasonic Waveform Tomography", *Journal of Nondestructive Evaluation*, 1-20, https://doi.org/10.1007/s10921-025-01238-1 (Impact Factor: 2.5).
4. Yang K., McVay M., Rodgers M., Wasman S., **Tran K. T.,** Faraone M., Herrera R., and Horhota, D. (2025) "Shallow Foundation Load Testing on Natural Florida Limestone: single rock layer and rock-over-sand subsurface", *Canadian Geotechnical Journal,* 62: 1–21, https://cdnsciencepub.com/doi/10.1139/cgj-2024-0183, (Impact Factor: 3.0).
5. Kahbasi A.[G], **Tran K.T**, Cox B, and Abbas A. (2025) "Deep site characterization with large mobile shaker using 2D time-domain FWI method of SH- and Love-waves", *Journal of Applied Geophysics*, 235, 10565, https://doi.org/10.1016/j.jappgeo.2025.105657, (Impact Factor: 2.0).
6. **Tran K.T.**, Mirzanejad M.[G], Horhota D. and Wasman S. (2024), 3D full-waveform tomography of SPT-seismic wavefields in karst Florida limestone" *Journal of Transportation Research Board*, https://doi.org/10.1177/03611981241233295, (Impact Factor: 1.70).
7. Abbas A., Cox B., **Tran K.T**., Corey I., and Dawadi N. (2024), "An Open-Access Database of Active-source and Passive-wavefield DAS and Nodal Station Measurements at the Newberry Florida Site", *Seismological Research Letters,* 95 (2A): 1082–1098, https://doi.org/10.1785/0220230216, (Impact Factor: 3.30).
8. **Tran K.T**., Mirzanejad M.[G], Horhota D. and Wasman S. (2024), "Imaging voids beyond SPT boring with 3D full-waveform tomography" *Journal of Applied Geophysics*, 105256, https://doi.org/10.1016/j.jappgeo.2023.105256, (Impact Factor: 2.0).
9. Vantassel J., Crocker J., Cox B., and T**ran K.T**., (2024). "Subsurface Imaging Dataset Acquired at the Garner Valley Downhole Array Site using a Dense Network of Three-Component Nodal Stations", *Earthquake Spectra*, pp. 1-19 https://doi.org/10.1177/87552930231209734, (Impact Factor: 5.0).

10. Wang Y.[G], **Tran K.T.**, Cox B., and Vantassel J. (2023). "Geotechnical site characterization with 3D ambient noise tomography", *Geophysics*, Vol. 88 (4), pp. KS101–KS112, https://doi.org/10.1190/geo2022-0445.1, (Impact Factor: 3.264).
11. Dinh K, **Tran K.T.**, Gucunski N., Ferraro C. and Do T. (2023) "Imaging concrete structures with ultrasonic shear waves: technology development and demonstration of capabilities", *Infrastructures*, Vol. 8 (53), pp. 22, https://doi.org/10.3390/infrastructures8030053 (Impact Factor: 2.980).
12. Wang Y.[G], Khorrami M. [G], **Tran K.T.**, and Horhota D. (2023). "Application of ambient noise tomography for deep void detection", *Journal of Applied Geophysics*, Vol. 209, 104922, https://doi.org/10.1016/j.jappgeo.2022.104922, (Impact Factor: 1.845).
13. Mirzanejad M.[G], **Tran K.T.**, and Wang Y.[G] (2022). "3D Gauss-Newton constant-Q viscoelastic full-waveform inversion of seismic wavefields" *Geophysical Journal International,* Vol. 231 (3), pp. 1767–1785, https://doi.org/10.1093/gji/ggac287, (Impact Factor: 3.352).
14. Chen R.[G], **Tran K.T.,** Dinh K., and Ferraro C. (2022). "Evaluation of ultrasonic SH-waveform tomography for determining rebar location and size in concrete structures" *Journal of Nondestructive Evaluation,* Vol. 41 (35), https://doi.org/10.1007/s10921-022-00866-1, (Impact Factor: 2.484).
15. Chen R.[G], **Tran K.T.,** La H., Rawlinson T. and Dinh K., (2022), "Detection of delamination and rebar debonding in concrete structures with ultrasonic SH-waveform tomography" *Automation in Construction,* Vol. 133, 104004, pp 10, https://doi.org/10.1016/j.autcon.2021.104004 (Impact Factor: 10.517).
16. Mirzanejad M.[G], **Tran K.T**., McVay M., Horhota D. and Wasman S. (2021), "Deep void detection with 3D full waveform inversion of surface-based and in-depth source seismic wavefields" *Engineering Geology,* Vol. 294, 106407, pp. 13, (Impact Factor: 6.755), https://doi.org/10.1016/j.enggeo.2021.106407.
17. Wang Y.[G], **Tran K.T.**, and Horhota D. (2021). "Road sinkhole detection with 2D Ambient noise tomography" *Geophysics,* Vol. 86 (6), pp. 11, (Impact Factor: 3.264).
18. Chen R.[G] and **Tran K.T.** (2021). "2D Gauss-Newton full waveform inversion of SH- and Love-waves in the time-domain" *Journal of Applied Geophysics*, 104636, pp.10, https://doi.org/10.1016/j.jappgeo.2021.104363, (Impact Factor: 2.121).
19. Dinh K., Gucunski N., **Tran K.T.**, Novod A., and Nguyen T. (2021). "Full-resolution 3D imaging for concrete structures with dual-polarization GPR", *Automation in Construction,* Vol. 125, 103652, pp.11, https://doi.org/10.1016/j.autcon.2021.103652 (Impact Factor: 10.517).
20. Chen R.[G], **Tran K.T** and Wang Y.[G] (2021). "2D time-domain full waveform inversion of SH- and Love-waves for geotechnical site characterization" *Near Surface Geophysics*, Vol. 19 (3), pp. 283-295, https://doi.org/10.1002/nsg.12137, (Impact Factor: 2.010).
21. Ahmed H., La H.M., **Tran K.T.** (2020) "Rebar Detection and Localization for Bridge Deck Inspection and Evaluation using Deep Residual Networks" *Automation in Construction*, Vol. 120, 103393, pp.18, https://doi.org/10.1016/j.autcon.2020.103393, (Impact Factor: 7.700).

22. **Tran K.T.**, Nguyen D.T.[G], Hiltunen D.R., Stokoe K., and Menq F. (2020) "3D full-waveform inversion in time-frequency domain: field data application", *Journal of Applied Geophysics*, Vol. 178, 104078, pp.13, https://doi.org/10.1016/j.jappgeo.2020.104078, (Impact Factor: 2.121).

23. Mirzanejad M.[G], **Tran K.T.**, McVay M., Horhota D. and Wasman S. (2020), "Coupling of SPT and 3D full waveform inversion for deep site characterization*" Soil Dynamics and Earthquake Engineering,* Vol. 136, 106196, pp.12, https://doi.org/10.1016/j.soildyn.2020.106196, (Impact Factor: 3.718).

24. Mirzanejad M.[G], **Tran K.T.**, McVay M., Horhota D. and Wasman S. (2020), "Sinkhole detection with 3D full seismic waveform tomography" *Geophysics,* Vol. 85 (5), pp. B147–B157, (Impact Factor: 3.264).

25. **Tran K.T.**, Jalinoos F., Nguyen D.T.[G], and Agrawal A. (2019), "Evaluation of bridge abutment with ultraseismic waveform tomography: field data application", *Journal of Nondestructive Evaluation,* Springer, Vol 38 (95), pp.13, https://doi.org/10.1007/s10921-019-0631-4, (Impact Factor: 1.995).

26. Rahimi S., Moody T, Wood C., Mofarraj B., Bernhardt M., **Tran K.T.**, and King C. (2019), "Mapping Subsurface Conditions and Seepage Detections for an Embankment Dam Using Geophysical Methods: A Case Study of the Kinion Lake Dam", *Journal of Environmental and Engineering Geophysics,* EEGS*,* Vol 24 (3), pp. 373–386, (Impact Factor: 3.329).

27. Mirzanejad M.[G] and **Tran K.T.**, (2019), "3D Viscoelastic Full Waveform Inversion of Seismic Waves for Geotechnical Site Investigation", *Soil Dynamics and Earthquake Engineering,* Elsevier, Vol. 122, pp. 67-78, (Impact Factor: 3.718).

28. **Tran K.T.**, Jalinoos F., and Agrawal A. (2019), Characterization of Concrete Pile Groups with 2-D Seismic Waveform Tomography, *Journal of Nondestructive Evaluation,* Springer, Vol. 38 (25), pp.12, https://doi.org/10.1007/s10921-019-0565-x, (Impact Factor: 1.995).

29. **Tran K.T.**, Mirzanejad M.[G], McVay M., and Horhota D. (2019), "3D Time-Domain Gauss-Newton Full Waveform Inversion for Near-Surface Site Characterization", *Geophysical Journal International*, 217, pp. 206–218, (Impact Factor: 2.574).

30. Nguyen D.T.[G] and **Tran K.T.** (2018), "Site Characterization with 3-D Elastic Full Waveform Tomography", *Geophysics,* SEG, Vol. 83 (5), pp. R389–R400, (Impact Factor: 3.264).

31. **Tran K.T.** and Sperry J.[G] (2018), "Application of 2-D Full Waveform Tomography on Land-streamer Data for Assessment of Roadway Subsidence", *Geophysics*, Vol. 83, (3), pp. EN1–EN11 (Impact Factor: 3.264).

32. Jalinoos F., **Tran K.T**., Nguyen D.T. [G], and Agrawal A. (2017), "Evaluation of Bridge Abutments and Bounded Wall Type Structures with Ultraseismic Waveform Tomography", *Journal of Bridge Engineering*, ASCE, Vol. 22(12): 04017104, pp. 13, https://doi.org/10.1061/(ASCE)BE.1943-5592.0001150, (Impact Factor: 3.066).

33. **Tran K.T.**, Wasman S., McVay M., and Herrera R. (2017) "Capacity Evaluation of Voided Driven Piles Using Embedded Data Collector", *Canadian Geotechnical Journal*, Vol. 54(10), pp. 1397–1407, **Editor's Choice Paper for 2017,** (Impact Factor: 2.802).

34. **Tran K.T.** and Luke B. (2017), "Full Waveform Tomography to Resolve Desert Alluvium", *Soil Dynamics and Earthquake Engineering,* Elsevier, Vol. 9, pp. 1-8, https://doi.org/10.1016/j.soildyn.2017.04.018 (Impact Factor: 3.718).
35. **Tran K.T.**, Sperry J. [G], McVay M., Wasman S., and Horhota D. (2017), "Shear Wave Velocity Profiles of Roadway Substructures from Multichannel Analysis of Surface Waves and Waveform Tomography", *Journal of Transportation Research Board*, Vol. 2655, pp. 36–44 (Impact Factor: 1.560).
36. Nguyen D.T. [G], **Tran K.T**., and Gucunski N. (2017), "Detection of Bridge Deck Delamination Using Full Ultrasonic Waveform Tomography", *Journal of Infrastructure Systems,* ASCE, Vol. 23(2): 04016027, pp. 9 (Impact Factor: 1.538).
37. **Tran K.T.**, McVay M., Nguyen D.T. [G], and Wasman S. (2016), "Evaluation of Drilled Shaft Capacity Using Embedded Sensors and Statnamic Testing", *Journal of Bridge Engineering*, ASCE, Vol. 21(11):04016075, pp. 13, (Impact Factor: 3.066).
38. Sullivan B. W. [G], **Tran K.T**, and Logston B. (2016), "Characterization of Abandoned Mine Voids Under Roadway Using Land-streamer Seismic Waves", *Journal of Transportation Research Board*, Vol. 2580, pp. 71-79, (Impact Factor: 1.560).
39. Nguyen D.T. [G], **Tran K.T.**, and McVay M. (2016), "Evaluation of Unknown Foundations Using Surface-Based Full Waveform Tomography", *Journal of Bridge Engineering,* ASCE, Vol. 21 (5): 04016013, pp: 10, (Impact Factor: 3.066).
40. **Tran K.T.**, McVay M., Horhota D., Faraone M., and Sullivan B.W. [G] (2014), "Seismic Waveform Tomography at a Site with Open Chimneys", *Journal of Transportation Research Board*, Vol. 2433, pp. 10-17, (Impact Factor: 1.560).
41. **Tran K.T.**, McVay M., Horhota D., and Faraone M. (2013), "Sinkhole Detection Using 2D Full Seismic Waveform Tomography", *Geophysics*, SEG, Vol. 78 (5), pp. R175–R183, (Impact Factor: 3.264).
42. **Tran K.T.** and McVay M. (2012), "Site Characterization Using Gauss-Newton Inversion of 2-D Full Seismic Waveform in Time Domain", *Soil Dynamics and Earthquake Engineering*, Elsevier, Vol. 43, pp. 16-24, (Impact Factor: 3.718).
43. **Tran K.T**. and Hiltunen DR. (2012), "One-Dimensional Inversion of Full Waveform Using Genetic Algorithm", *Journal of Environmental and Engineering Geophysics,* EEGS, Vol. 17 (4), pp. 197-213 (Impact Factor: 3.329).
44. **Tran K.T.** and Hiltunen D.R. (2012), "Two-Dimensional Inversion of Full Waveform Using Simulated Annealing", *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 138(9), pp. 1075-1090, (Impact Factor: 2.701).
45. **Tran K.T.**, McVay M., Herrera R., and Lai P. (2012a), "Estimating Static Tip Resistance of Driven Piles with Bottom Pile Instrumentation", *Canadian Geotechnical Journal,* Vol. 49, pp. 381–393, (Impact Factor: 2.802).
46. **Tran K.T.**, McVay M., Herrera R., and Lai P. (2012b), "Estimation of Nonlinear Static Skin Friction on Multiple Pile Segments Using Measured Hammer Impact Response at the Top and Bottom of the Pile", *Computers and Geotechnics*, Elsevier, Vol. 41, pp. 79-89, (Impact Factor: 4.956).

47. **Tran K.T**. and Hiltunen D.R. (2012), "Inversion of Combined Surface and Borehole First-Arrival Time", *Journal of Geotechnical and Geoenvironmental Engineering*, ASCE, Vol. 138 (3), pp. 272-280, (Impact Factor: 2.701).
48. **Tran K.T.**, McVay M., Herrera R., and Lai P. (2011), "A New Method for Estimating Driven Pile Static Skin Friction with Instrumentation at the Top and Bottom of the Pile", *Soil Dynamics and Earthquake Engineering*, Elsevier, Vol. 31 (9), pp. 1285-1295, (Impact Factor: 3.718).
49. **Tran K.T.** and Hiltunen D.R. (2011), "Inversion of First-Arrival Time Using Simulated Annealing", *Journal of Environmental and Engineering Geophysics*, EEGS, Vol. 16, pp. 25-35, (Impact Factor: 3.329).

**Patents**

50. McVay M., **Tran K.T**., "Detection of Sinkholes or Anomalies", Issued October 2, 2018, U.S. Patent No. 10,088,586.
51. McVay M., **Tran K.T**., Herrera R., and Lai P. "Detection of Static Tip Resistance of a Pile", Issued June 12, 2018, U.S. Patent No. 9,995,643

**SAMPLE RESEARCH PROJECTS**

1. "Drilled shaft imaging with 2D ultrasonic waveform tomography" (sole PI: Tran K.T), Florida Department of Transportation, $303,000, 03/2024 to 09/2026.
2. "Determination of in-situ rock density and strength with SH-Love wave tomography" (PI: Tran K.T. Co-PI: McVay M), Florida Department of Transportation, $252,000, 12/2022 to 05/2025.
3. "Use of 3D Seismic Waveform Tomography with SPT-source for Geotechnical Site Characterization" (PI: Tran K.T. Co-PI: Scott Wasman), Florida Department of Transportation, $338,799, 04/2022 to 03/2025.
4. "Collaborative Research: 3D Ambient Noise Tomography (3D ANT) for Natural Hazards Engineering" (PI: Tran K.T., Co-PI: Brady Cox), National Science Foundation, $778,652 (Tran's share: $390,730), CMMI-1930697/1931162, 09/2019 to 08/2024.
5. "Phase II: Field Load Testing of Shallow Foundations in Florida Limestone" (PI: McVay M, co-PIs: Rogders M & Tran K.T.), Florida Department of Transportation, $348,388, 09/2019 to 12/2022.
6. "In-service Assessment of Road Sinkholes with 2D Ambient Noise Tomography" (sole PI: Tran K.T.), Florida Department of Transportation, $200,000, 09/2019 to 08/2021.
7. "Geotechnical Site Characterization with 3-D Full Seismic Waveform Tomography", (sole PI: Tran K.T.), National Science Foundation, $206,216, CMMI-1637557, 07/2016 to 06/2020.
8. "RAPID/Collaborative Research: Spatial Variability of Small-Strain Stiffness, Go, and Effects on Ground Movements Related to Geotechnical Construction in Urban Areas",

(PI: Richard Finno, co-PIs: Kenneth Stokoe, Tran K.T.), National Science Foundation, $200,000, CMMI-1841584/1841582/1841576, 08/2018 to 07/2020.

9. "Sinkhole Detection with 3-D Full Elastic Waveform Tomography", (PI: McVay M, co-PIs Tran K.T. and Wasman S), Florida Department of Transportation, $322,441, 10/2017 to 06/2020.

10. "Evaluation of Bridge Abutments with Full Ultraseismic Waveform Tomography", (sole PI: Tran K.T.), Federal Highway Administration, $96,900, 06/2015 to 07/2017.

## SERVICE

***Associate Editor, ASCE Journal of Bridge Engineering*** (12/2017-present)

***Memberships***

- Vice Chair of ASCE Geophysical Engineering Committee 2022-present
  Secretary of ASCE Geophysical Engineering Committee 2018-2022
  Member of ASCE Geophysical Engineering Committee 2014-2018
- Member of TRB Soil and Rock Properties and Site Characterization Committee (AKG 20) 2020-present
- Member of ASCE Embankments, Dams, and Slopes Committee 2018-present
- Member of TRB Geotechnical Site Characterization Committee (AFP20) 2017-2020
- Member of TRB Exploration and Classification of Earth Materials Committee (AFP20) 2014-2017
- Member of TRB Subcommittee on Geophysics, AFP20 (1) 2014- present
- Member of American Society of Civil Engineers (ASCE) 2013-present
- Member of Transportation Research Board (TRB) 2012-present

***Activities in profession***

- Session chair: Geophysics and Ground Motion, 2023
  Geo-Congress 2023 March 26–29, Los Angeles, California
- Session co-chair, Near Surface Geophysics, 2020
  Society of Exploration Geophysicists (SEG) Annual Meeting, Houston, Texas, October 11-16
- Session chair: Seismic Site Characterization, 2016
  Geo-Congress 2016, February 14-17, Phoenix, Arizona.