**TRAN THANH TUAN**

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## JOB OBJECTIVE

Conducting research on the development and enhancement of structural designs to improve their durability and performance against natural hazards

## EDUCATION

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|---|---|
| 09/2016 - 02/2020 | Kunsan National University, South Korea, Ph.D., Structural/Earthquake Engineering |
| 09/2010 - 11/2013 | Ho Chi Minh City University of Technology, Viet Nam, M.S, Structural/Earthquake Engineering |
| 09/2004 - 03/2009 | Ho Chi Minh City University of Technology, Viet Nam, B.S, Civil Engineering |

## EMPLOYMENT HISTORY

| | |
|---|---|
| 03/2020 - present | **Research Fellow**<br>Institute of Offshore Wind Energy, Kunsan National University (South Korea) |
| 09/2016 - 02/2020 | **PhD research assistant**<br>Department of Civil Engineering, Kunsan National University (South Korea) |
| 05/2010 - 10/2022 | **Lecturer**<br>Faculty of Technology and Technique, Quy Nhon University (Vietnam) |

## HONORS AND AWARDS

(1) Best paper award from Nuclear Engineering and Technology journal (2022)
(2) Excellent paper award on 10th Asia-Pacific Forum on Renewable Energy (AFORE) international conference (2021).
(3) Outstanding graduate student award from Brain Korea 21+ (BK 21), Government grand of South Korea (2019).
(4) Best presentation award on Korea Institute for Structural Maintenance and Inspection (KSMI) conference (2018).
(5) Scholarship for Outstanding Vietnamese students form CG Engineering, South Korea (2017).
(6) University Scholarship during PhD courses for excellent academic performance, KSNU, South Korea.
(7) Excellent academic scholarship during bachelor course (2008).

## RESEARCH EXPERIENCE

**Institute of Offshore Wind Energy, Kunsan National University (South Korea)**
***Research fellow***

1. *Project: Development of IoT-based monitoring system for offshore wind*
   Cooperated with Spec Engineering and DOT, 2022-2024

- Development of smart safety evaluation technology for offshore wind power support structures using digital twin technology

2. *Project: A Study on Structural Safety Improvement of L-Type Bolt Joint for Wind Tower*
   Funded by Korea Research Foundation (KRF), 2021-2023
- Development of technology to improve structural safety of L-type bolt joint for wind power

3. *Project: A study to increase structural safety of flange joint for wind tower*
   Funded by Korea Electric Power Corporation (KEPCO), 2021-2022
- Reducing the stress concentration in the bolt
- Increasing the strength resistance of flange joint
- Setting experimental tests (coupon test, torque test and tensile test) for L-type flange joint

**Dept. Civil and Environmental Engineering, Kunsan National University (South Korea)**
***Ph.D research assistant***

1. *Project: Development of probabilistic site response analysis program for earthquake response analysis*
   Funded by Korea Electric Power Corporation (KEPCO), 2017-2018
- Methodology survey and related design criteria survey
- Development of soil damping relationship and probabilistic variable extraction algorithm for probabilistic site response analysis
- Developed the probabilistic model for uncertainty quantification of soil properties using advanced simulation methods (Monte Carlo simulation)

2. *Project: Development the procedure to evaluate the seismic performance of the cabinet facilities*
   Funded by Korea Institute of Energy Technology Evaluation and Planning (KETEP) and the Ministry of Trade, Industry & Energy of Korea(MOTIE), 2017-2021
- Undertook qualitative and quantitative risk assessments of specified structures (NPPs, OWT) subjected to earthquakes.
- Developed the probabilistic model for uncertainty quantification of nuclear facilities using advanced simulation methods (i.e, random field)
- Developed framework for seismic performance of nuclear facilities
- Assessed vulnerability, damage, and risk assessments of structures

3. *Other works*
- Consulant works on design ground motion for structures and infrastructures based on code specifications

## TEACHING EXPERIENCE

- Lecturer: Construction Engineering
- Supervisor: Final Year Project for undergraduate students

## SKILLS

**Structural analysis software**

- SACS, ANSYS (Mechanical, Aqwa, Twin Builder), OpenSees, Bladed, Etabs, Sap2000

**Language programs**

- MATLAB, Python, Tcl/Tk, VBA

**Experimental test**

- Coupon test, Torque test, Tensile test

**Testing equipment**

- Ultrasonic Test Machine, Hydraulic Torque Machine

## ACHIVEMENTS

**Practical guidelines**

***Developing a series of practical guidelines for design of fixed offshore wind turbines (tower, L-type flange joint, monopile, grount connection, etc)***

- **Thanh-Tuan Tran** and Daeyong Lee, (2022), Design Guideline for Wind Turbine Support Structure - Tower Shell - A Primer For Structural Engineers, Hanul Media, South Korea.
- **Thanh-Tuan Tran** and Daeyong Lee, (2022), Design Guideline for Wind Turbine Support Structure - L-type Flaneg Joint - A Primer For Structural Engineers, Hanul Media, South Korea.
- **Thanh-Tuan Tran** and Daeyong Lee, (2022), Design Guideline for Wind Turbine Support Structure - Monopile - A Primer For Structural Engineers, Hanul Media, South Korea.

**Book**

- Lan Thi Pham, **Tuan Thanh Tran**, (2016), Civil Engineering Drawings Practice. Construction publishing house – ministry of construction, Viet Nam (in Vietnamese).

**Softwares/Tools**

- Vibration control for Offshore Wind Turbine - VC4OWT (MATLAB)
- Korea Seismicity Map - KSMAP (PYTHON)
- Probabilistic Site Response Analysis - pSHAKE (PYHTON)
- Modelling and Simulation of Uncertainty using Random Field Approach- UQSSL (in progress)

## PUBLICATIONS

**Peer-review journal papers**

***A total of 19 publications (15 Q1 + 4 Q2), of which 15 are first author***

- **Tran, T. T.**, Kang, S., & Lee, D. (2022). Improving Structural Safety of L-Type Flange Joint for Wind Towers. *Energies*, 15(23), 8967.
- **Tran, T. T.**, & Lee, D. (2022). Understanding the behavior of l-type flange joint in wind turbine towers: Proposed mechanisms. *Engineering Failure Analysis*, 142, 106750.
- **Tran, T. T.**, Kim, E., & Lee, D. (2022). Development of a 3-legged jacket substructure for installation in the southwest offshore wind farm in South Korea. *Ocean Engineering*, 246, 110643.
- **Tran, T. T.**, & Lee, D. (2022). Development of jacket substructure systems supporting 3MW offshore wind turbine for deep water sites in South Korea. *International Journal of Naval Architecture and Ocean Engineering*, 14, 100451.
- Nguyen, P. C., **Tran, T. T.**, & Nghia-Nguyen, T. (2021). Nonlinear time-history earthquake analysis for steel frames. *Heliyon*, 7(8), e06832.
- **Tran, T. T.**, Le, T. M. T., Nguyen, P. C., Kim, D., Pham, T. M., Salman, K., & Chang, S. (2021). Probabilistic Seismic Demand Model and Seismic Fragility Analysis of NPP Equipment Subjected to High-and Low-Frequency Earthquakes. *Nuclear Science and Engineering*, 1-20.
- **Tran, T. T.**, Kang, S., Lee, J. H., & Lee, D. (2021). Directional Bending Performance of 4-Leg Jacket Substructure Supporting a 3MW Offshore Wind Turbine. *Energies*, 14(9), 2725.
- **Tran, T. T.**, Salman, K., & Kim, D. (2021). Distributed plasticity approach for nonlinear analysis of nuclear power plant equipment: Experimental and numerical studies. *Nuclear Engineering and Technology*.

- **Tran, T. T.**, Hussan, M., Kim, D., & Nguyen, P. C. (2020). Distributed plasticity approach for the nonlinear structural assessment of offshore wind turbine. *International Journal of Naval Architecture and Ocean Engineering*, 12, 743-754.
- **Tran, T. T.**, Cao, A. T., Kim, D., & Chang, S. (2020). Seismic Vulnerability of Cabinet Facility with Tuned Mass Dampers Subjected to High-and Low-Frequency Earthquakes. *Applied Sciences*, 10(14), 4850.
- **Tran, T. T.**, Nguyen, P. C., So, G., & Kim, D. (2020). Seismic behavior of steel cabinets considering nonlinear connections and site-response effects. *Steel and Composite Structures*, 36(1), 17-29.
- **Tran, T. T.**, Salman, K., Han, S. R., & Kim, D. (2020). Probabilistic Models for Uncertainty Quantification of Soil Properties on Site Response Analysis. *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering*, 6(3), 04020030.
- Kashif Salman, **Thanh-Tuan Tran** & Dookie Kim (2020) Seismic capacity evaluation of NPP electrical cabinet facility considering grouping effects, *Journal of Nuclear Science and Technology*, DOI: 10.1080/00223131.2020.1724206
- Cao, A. T., **Tran, T. T.**, Nguyen, T. H. X., & Kim, D. (2019). Simplified Approach for Seismic Risk Assessment of Cabinet Facility in Nuclear Power Plants Based on Cumulative Absolute Velocity. *Nuclear Technology*, 1-15.
- Salman, K., **Tran, T. T.**, & Kim, D. (2020). Grouping effect on the seismic response of cabinet facility considering primary-secondary structure interaction. *Nuclear Engineering and Technology*, 52(6), 1318-1326.
- **Tran, T. T.**, & Kim, D. (2019). Uncertainty quantification for nonlinear seismic analysis of cabinet facility in nuclear power plants. *Nuclear Engineering and Design*, 355, 110309.
- **Tran, T. T.**, Cao, A. T., & Kim, D. (2019). Fragility assessment for electric cabinet in nuclear power plant using response surface methodology. *Nuclear Engineering and Technology*, 51(3), 894-903.
- **Tran, T. T.**, Han, S. R., & Kim, D. (2018). Effect of probabilistic variation in soil properties and profile of site response. *Soils and Foundations*, 58(6), 1339-1349.
- **Tran, T. T.**, Nguyen, T. H., & Kim, D. (2018). Seismic incidence on base-isolated nuclear power plants considering uni-and bi-directional ground motions. *Journal of Structural Integrity and Maintenance*, 3(2), 86-94.

**Presentations (oral)**

- **Tran, T. T**. & Lee, D. (2022) Design Of L-Type Flange Joint For Wind Tower. Autumn KWEA conference, Jeju, South Korea, (2021.11.14~15).
- **Tran, T. T**. & Lee, D. (2022) Redesign of L-Flange Joint for 5MW Wind Tower. 2022 Convention conference and civil EXPO , BPEX, Busan, South Korea, (2022.10.19~10.21).
- **Tran, T. T**. & Lee, D. (2021) Ultimate Load Capacity Assessment of the L-type Flange Connection of An Existing 5MW Wind Tower. Asia-Pacific Forum on Renewable Energy (AFORE) , Ramada Plaza, Jeju, South Korea, (2021.10.31~11.03).
- **Tran, T. T**. & Lee, D. (2021) Effects of Flange Gap on the Structural Performance of Bolted Flange Joint for Wind Turbine. Spring KWEA conference, Jeju, South Korea, (2021.7.5~7).
- **Tran, T. T**., Kim. E., Lee J. & Lee, D. (2021) Development of Pre-piled Jacket Substructures Supporting 3MW Wind Turbine at Different Sea Water Depths. Spring KWEA conference, Jeju, South Korea, (2021.7.5~7).
- **Tran, T. T.**, Cao, A. T., Nguyen, P. C., & Kim, D. (2021). Influences of Ground Motion Frequency on the Seismic Vulnerability of Nonstructural Components. In Structural Health Monitoring and Engineering Structures (pp. 543-549). Springer, Singapore.
- **Tran, T. T.** & Lee, D. (2020). A Study on Dynamic Response of 4-Leg Jacket Structures under Different Sea Water Levels. Autumn KWEA conference, Jeju, South Korea, (2021.11.16~18).
- **Tran, T. T**. & Lee, D. (2020). Influence of Incident Wave/Wind Direction on Dynamic Response of 4-legged Jacket Substructures. KSCE 2020 convention, Jeju, South Korea, (2021.10.21~23).

- **Tran, T. T**., Cao, A. T., Salman, K., Nguyen, P. C., & Kim, D. (2020). Experimental and numerical modal analysis of cabinet facility considering the connection nonlinearity. In ICSCEA 2019 (pp. 1093-1100). Springer, Singapore.
- **Tran, T. T**., Nguyen, P. C., Han, S. R., & Kim, D. (2020). Stochastic Site Response Analysis in Consideration with Various Probability Distributions of Geotechnical Properties. In CIGOS 2019, Innovation for Sustainable Infrastructure (pp. 901-906). Springer, Singapore.

## PROFESSIONAL MEMBERSHIP

- Energies (https://www.mdpi.com/journal/energies/submission_reviewers)
- Sustainability
- Buildings
- ETASR (Engineering, Technology & Applied Science Research)
- JMSE (Journal of Marine Science and Engineering)
- JSIM (Journal of Structural Integrity and Maintenance)
- Natural Hazards Research
- Frontier in Marine Science
- Applied Sciences

## SYNERGISTIC ACTIVITIES

**Invited**

- Speaker at technical seminar, "Technical Seminar on Design and Construction of Nearshore and offshore Wind Turbines", hosted by FECON corporation (2022)

**Graduate/undergraduate students mentored**

- Mentored 2 students in 2019 Fall for Master program in Ho Chi Minh City University of Technology.
- Mentored undergraduate students from 2010 to 2016 for Bachelor program in Quy Nhon University.

## RESEARCH INTERESTS

- Structural dynamics with application in earthquake and wind engineering.
- Structural reliability and its application (i.e. failure probabilities, safety indicates).
- Digital twin technology and application in structures.

## REFEREES

**(1) Kim Dookie**
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