

## CURRICULUM VITAE (C.V)



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### Mahmoud Nasser Hussien Ahmed

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### Research

My principle research interests lie in the field of soil mechanics and geotechnical earthquake engineering, with emphases on seismic soil-structure interaction and soil characterization. Currently, I am engaged in experimental and analytical studies of soil-structure interaction associated with highly non-linear behavior, including soil liquefaction during earthquakes. In addition to topics in mechanical behavior of granular soils and experimental simulation of Standard Penetration Tests (SPT), I am pursuing research in shear wave velocity measurements using new laboratory technique (Piezoelectric Ring Actuator Technique, P-RAT).

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### Education

4/2008 – 9/2011 **Ph.D in Civil Engineering**, Kyoto University, Department of Civil and Earth Resources Engineering, Japan

Supervisor: Professor Susumu Iai,  
Director, Institute of Sustainability Science/Professor, Disaster Prevention Research Institute, Kyoto University, Gokasho, Uji 611-0011 Japan

I attend three graduate courses and I obtained a total of 10 credits:

Principles of Geotechnics	2 credits
Seminar on Infrastructure Engineering: Part 1	4 credits
Seminar on Infrastructure Engineering: Part 2	4 credits

9/2001 – 5/2005 **M.Sc in Civil Engineering**, Assiut University, Department of Civil Engineering, Egypt

Supervisor: Professor Ebraheem Hasan Ramadan,  
Professor, Department of Civil Engineering, Assiut University, Assiut, Egypt

Graduate courses:

Advanced Soil Mechanics and Foundations	Excellent
Applied Soil Mechanics	Excellent
Computer Application in Soil Mechanics and Foundation	Excellent

	Advance Engineering Mathematics	Excellent
1994-1999	<b>B. Sc in Civil Engineering</b> , Assiut University, Department of Civil Engineering, Egypt	

### **Academic Positions**

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1/2012-Now	Assistant Professor, Civil Engineering Department, Faculty of Engineering, Assiut University
11/2012-11/2014	Postdoctoral Fellow, Department of Civil Engineering, Faculty of Engineering, University of Sherbrooke, Canada
9/2011-12/2011	Research Assistant, Graduate School of Engineering, Kyoto University, Japan.
6/2005-12/2011	Assistant Lecturer, Faculty of Engineering, Assiut University, Egypt.
1/2000-5/2005	Teaching Assistant, Faculty of Engineering, Assiut University, Egypt.

### **Scholarships and Awards**

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- NSERC Research Scholarship for Postdoctoral studies, 2 years (2012-2014)
- Egyptian Government Scholarship for Ph.D. study in civil Engineering, four years (2007 - 2011).
- Assiut University Scholarship for Outstanding Undergraduates, (1994-1999).
- Professor Dr Hussein Kamel Award in Geodesy, Assiut University, (1999).

### **Personal**

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Born December 9, 1975 in Sohag, Egypt. Egyptian citizen. Japanese residences permit B. Married and have three daughters Dai, Maryam, and Retal.

### **Language**

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Arabic native speaking, excellent in English (573 International TOEFL), Knowledge of French, Poor in Japanese.

### **Publications**

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#### **Book Chapters, and Thesis**

1. Iai, s., Tobita, T., **Hussien, M. N.**, Rollins, K. M, and Ozutsumi, O. (2010). Soil-pile interaction under lateral load, *Soil-Foundation-Structure Interaction*, Chapter 13, p101–108, CRC Press.  
<http://www.crcnetbase.com/doi/abs/10.1201/b10568-16>
2. **Hussien, M.N.** Effects of nonlinear soil-structure interaction on lateral behavior of pile foundations. PhD Thesis, Kyoto University, Kyoto, Japan; 2011.
3. **Hussien, M.N.** Study of the behavior of end bearing piled raft foundation. M.Sc Thesis, Assiut University, Assiut, Egypt; 2005.

### **Technical Reports**

1. **Hussien, M. N.**, Karray, M. (2014). Hydraulic fracturing and geothermal systems: Current knowledge and potential impacts. Rapport GEO-14-02, Présenté à James Kendall Institut de Recherche d'Hydro-Québec, Canada, 153 p.
2. **Hussien, M. N.**, Karray, M. (2013). A review of cyclic stress approach for liquefaction evaluations. Québec, Canada, 18 p.

### **(Peer review) Journal Papers**

1. **Hussien, M. N.**, Karray, M., Tobita, T., Iai, S. (2015). Kinematic and inertial forces in pile foundations under seismic loading. *Computers and Geotechnics*, 69: 165-181.
2. Karray, M., Ben Romdhan, M., **Hussien, M. N.**, Éthier, Y. (2015). Measuring shear wave velocity of granular material using Piezoelectric Ring Actuator Technique (P-RAT). *Canadian Geotechnical Journal*, Online.
3. **Hussien, M. N.**, Karray, M. (2015). Shear wave velocity as a geotechnical parameter: an overview. *Canadian Geotechnical Journal*, Submitted.
4. Karray, M., **Hussien, M. N.** (2015). On the influence of grain size distribution on shear wave velocity and cone penetration resistance correlation. *Canadian Geotechnical Journal*, Submitted.
5. **Hussien, M. N.**, Karray, M. (2015). Analysis of pull-out loading effects on the lateral response of single piles in sand. *Soils and Foundations*, Submitted.
6. Amel Benalia, Bakhta Boukhatem, **Hussien, M. N.**, Karray, M. (2015). Prediction of axial capacity of piles driven in non-cohesive soils based on neural networks approach. *Journal of Civil Engineering and Management*, submitted.
7. **Hussien, M. N.**, Tobita, T., Iai, S., Karray, M. (2014). On the influence of vertical loads on the lateral response of pile foundation. *Computers and Geotechnics*, 55: 392-403. <http://www.sciencedirect.com/science/article/pii/S0266352X13001584>
8. **Hussien, M. N.**, Tobita, T., Karray, M., Iai, S. (2014). Nonlinear response of coupled soil-pile-structure systems to harmonic excitations. *Soil Dynamics and Earthquake Engineering Journal*, Submitted.
9. **Hussien, M. N.**, Tobita, T., Iai, S., Karray, M. (2014). Soil-pile-structure kinematic and inertial interaction observed in geotechnical centrifuge experiments. *Soil Dynamics and Earthquake Engineering Journal*, Submitted.
10. Samaneh, A. H., **Hussien, M. N.**, Karray, M., Chekirad, M., Roubtsova, V. (2014). Influence of the Grain-Size Distribution Curves of Basalt Beads on their Shear Behavior. *Canadian Geotechnical Journal*, Submitted.
11. Hazzar, L., **Hussien, M. N.**, Karray, M., Bouassida, M. (2014). Investigation of the influence of vertical loads on the lateral response of pile foundations. *Canadian Geotechnical Journal*, Submitted.
12. Hazzar, L., Karray, M., Bouassida, M., **Hussien, M. N.** (2013). Ultimate lateral resistance of piles in cohesive soil. *DFI Journal*, 7(1): 59-68. <http://www.maneyonline.com/doi/abs/10.1179/dfi.2013.005>
13. **Hussien, M. N.**, Tobita, T., Iai, S., Rollins, K. M. (2012), Vertical loads effect on the lateral pile group resistance in sand. *Geomechanics and Geoengineering: An International Journal*, 7(4): 263-282. <http://www.tandfonline.com/doi/abs/10.1080/17486025.2011.598571#Uws-3IUzNtl>
14. **Hussien, M. N.**, Tobita, T., and Iai, S. (2011), Non-linear response of coupled soil-pile-structure system under sinusoidal excitations with various frequencies. *Journal of Japan*

*Society of Civil Engineers, Ser. A2 (Applied Mechanics (AM)), Volume 67, Issue 2, pp. I\_471-I\_480.*

<http://adsabs.harvard.edu/abs/2012JSCAM..67.I471H>

15. **Hussien, M. N.**, Tobita, T., and Iai, S. (2011), Influence of vertical loads on lateral pile group response considering soil-pile-cap interactions. *Journal of Japan Society of Civil Engineers, Ser. A2 (Applied Mechanics (AM)), Volume 67, Issue 2, pp. I\_271-I\_280.*  
<http://adsabs.harvard.edu/abs/2012JSCAM..67.I271H>
16. **Hussien, M. N.**, Tobita, T., Iai, S., Rollins, K. M. (2010). Soil-pile separation effect on the performance of pile group under static and dynamic lateral loads. *Canadian Geotechnical Journal*, 47(11) : 1234-1246.  
<http://www.nrcresearchpress.com/doi/abs/10.1139/t10-026>
17. **Hussien, M. N.**, Tobita, T., Iai, S., (2010), Nonlinear seismic finite element analysis of soil-pile-superstructure interaction. *Journal of Applied Mechanics, JSCE*: (13) 601-609.  
<http://library.jsce.or.jp/jsce/open/00561/2010/13-0601.pdf>.
18. **Hussien, M. N.**, Tobita, T., Iai, S., Rollins, K. M., Ramadan, E. H (2009). Soil-structure interactions analysis for vertical and lateral loaded pile foundations. *Proceedings of 17<sup>th</sup> International Conference on Soil Mechanics & Geotechnical Engineering*, Alexandria, Egypt (ICSMGE), pp. 1251-1254.  
<http://ebooks.iospress.nl/publication/30191>
19. **Hussien, M. N.**, Ramadan, E.H., Hussein, M.H., and Ali A.A. (2006), Stress distribution under piled raft foundation, *Journal of the Egyptian Geotechnical Society*, Vol. 17, Part 2.
20. **Hussien, M. N.**, Ramadan, E.H., Hussein, M.H., and Ali A.A. (2004), Experimental and finite element simulation of end bearing piled raft foundation, *Journal of the Egyptian Geotechnical Society*, Vol. 15, Part 1, pp. 87-102.

### Conference Papers

1. Hazzar, L., **Hussien, M. N.**, Karray, M., (2015). Investigation of the influence of vertical loads on the lateral response of pile foundations in clayey soils, CRAMSG-2015.
2. **Hussien, M. N.**, Karray, M., Tobita, T., Iai, S. (2014). Influence of pullout loads on the lateral response of pile foundation. Proceedings of GeoRegina 2014, Regina, Canada, Paper no. 316.
3. **Hussien, M. N.**, Karray, M., Tobita, T., Iai, S. (2014). Effects of non-linear soil-structure interaction on dynamic characteristics of structures supported on piles. Proceedings of GeoRegina 2014, Regina, Canada, Paper no. 289.
4. Ben Romdhan, M., **Hussien, M. N.**, Karray, M. (2014). The use of piezoelectric ring-actuator technique in shear wave velocity measurement in granular media. Proceedings of GeoRegina 2014, Regina, Canada, Paper no. 307.
5. Ghali, M., **Hussien, M. N.**, Karray, M., Chekirad, M., Roubtsova, V. (2014). Laboratory investigation on the effect of grain size distribution of granular material on penetration test results. Proceedings of GeoRegina 2014, Regina, Canada, Paper no. 306.
6. **Hussien, M. N.**, Karray, M. (2013). Grain-size distribution effects on the mechanical behaviour of granular materials. Proceedings of GeoMontreal 2013, Montréal, Québec, Canada, Paper no. 287.
7. **Hussien, M. N.**, Tobita, T., Iai, S., Karray, M. (2013). Effects of soil-pile-structure interaction on the performance of pile group: centrifuge model tests. Proceedings of GeoMontreal 2013, Montréal, Québec, Canada, Paper no. 289.
8. Samaneh, A. H., **Hussien, M. N.**, Karray, M., Chekirad, M., Roubtsova, V. (2013). Laboratory investigation on shear strength of granular material considering the effect of

- particle size distribution. Proceedings of GeoMontreal 2013, Montréal, Québec, Canada, Paper no. 358.
9. Hazzar, L., Karray, M., **Hussien, M. N.** Bouassida, M. (2013). Three dimensional modeling of a pile group under lateral loading using finite differences method. Proceedings of GeoMontreal 2013, Montréal, Québec, Canada, Paper no. 201.
  10. Hazzar, L., Karray, M., Bouassida, M. **Hussien, M. N.** (2013). Comparison between numerical and experimental p-y curves of laterally loaded piles in Marine clay. CSCE 2013 General Conference, Québec, Canada, May 29 to June 1.
  11. **Hussien, M. N.**, Tobita, T., Iai, S., (2012). Seismic performance of coupled soil-pile-structure system: Parametric study. Proceedings of 9<sup>th</sup> International Conference on Urban Earthquake Engineering (9CUEE), Tokyo Institute of Technology, Tokyo, Japan.
  12. **Hussien, M. N.**, Tobita, T., Iai, S., (2011). Seismic analysis of coupled soil-pile-structure interaction using finite elements. Proceedings of 8<sup>th</sup> International Conference on Urban Earthquake Engineering (8CUEE), Tokyo Institute of Technology, Tokyo, Japan, pp. 495-499.
  13. **Hussien, M. N.**, Tobita, T., Iai, S., (2011). Centrifuge Analysis of Coupled Soil-pile-structure Interaction. Annuals of Disas. Prev. Res. Inst., Kyoto, No. 54.
  14. **Hussien, M. N.**, Tobita, T., Iai, S., Rollins, K. M. (2010). Vertical loads effect on lateral pile group response on the basis of soil-pile-cap interactions. Proceedings of 7<sup>th</sup> International Conference on Urban Earthquake Engineering (7CUEE) & 5<sup>th</sup> International Conference on Earthquake Engineering (5ICEE), Tokyo Institute of Technology, Tokyo, Japan, pp. 601-606.
  15. **Hussien, M. N.**, Tobita, T., Iai, S., (2010). Experimental and FE Analysis of Seismic Soil-Pile-Superstructure Interaction in Sand. Annuals of Disas. Prev. Res. Inst., Kyoto, No. 53. p. 299-306.
  16. **Hussien, M. N.**, Tobita, T., Iai, S. (2009). Effect of vertical load direction on the lateral response of piles. Proceedings of the 11<sup>th</sup> International Summer Symposium, Tokyo Institute of Technology (Tokyo), Japan, pp. 85-88.
  17. **Hussien, M. N.**, Tobita, T., Iai, S., Rollins, K. M. (2009). Soil-pile gap effect on the static behavior of full-scale pile group. Proceedings of Earthquake Geotechnical Engineering Satellite Conference, 17<sup>th</sup> International Conference on Soil Mechanics & Geotechnical Engineering (ICSMGE), Alexandria, Egypt.
  18. **Hussien, M. N.**, Tobita, T., Iai, S., Rollins, K. M. (2008). Study of the behavior of pile groups under lateral loading. Proceedings of the First Egypt-Japan International Symposium on Science and Technology (EJISST2008), WASEDA University, Tokyo, Japan, 2008, 135-136.
  19. **Hussien, M. N.**, Tobita, T., Iai, S., Rollins, K. M. (2008). Drained versus undrained finite element simulation of lateral loaded pile group. Proceedings of 6<sup>th</sup> Annual Meeting of Japan Association for Earthquake Engineering, Sendai, Japan, 134-135.
  20. **Hussien, M. N.**, Ramadan, E.H., Hussein, M.H., and Ali A.A. (2006), Nonlinear 3-dimensional analysis of end bearing piled raft foundation, 5<sup>th</sup> International Engineering Conference. Mansoura, Egypt. Pp. C135-C149.

### Technical paper reviewer

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- Geomechanics and Geoengineering Journal
- Journal of Japanese Society of Civil Engineering, JSCE

## Teaching

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### **Courses taught at Assiut University, Egypt**

Soil mechanics, Foundations design, Theory of structures (part I and II), Reinforced Concrete structure, Materials (part I and II), Prestressed concrete structures, and RC Water tanks.

### **Courses taught at Sohag University, Egypt**

Theory of structures and Structural dynamics

### **Courses taught at Kyoto University, Japan**

For graduate students (Teaching Assistant): Earthquake engineering, Soil mechanics, Finite element analysis, and laboratory instructor

### **Courses taught at Sherbrooke University, Canada**

For graduate students (Teaching Assistant): Soil characterization, Earthquake engineering, Soil mechanics, Foundations analysis using finite element and finite differences methods, and laboratory instructor

## Research supervision

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### **PhD. Students (Co-supervisor)**

<b>Name</b>	<b>Research Topic</b>
Lassaad Hazzar	Three dimensional modeling of pile foundations under combined loading using finite differences method
Samaneh Amirpour Harehdasht	Laboratory investigation on shear strength of glass beads
Michael Ghali	Effect of coarse grained particles of soil on SPT results: dynamic interaction issue
Marwan Khashila	Evaluation of liquefaction potential of sand using DSS technique
Ahmed Omer	Numerical investigation of the behavior of underground structures under seismic loading

### **MSc.Students (Co-supervisor)**

<b>Name</b>	<b>Research Topic</b>
Mohamed Ben Romdhane	Measuring shear wave velocity of sandy soil using Piezoelectric Ring Actuator Technique
Wafi Bouassida	Experimental and numerical settlement evaluation of shallow foundations using shear waves velocity

**Research experience for PhD., MSc., BSc and students (Mentor)**

<b>Name</b>	<b>Research Topic</b>
Fady Ghobrial	Seismic stability of slopes in clayey soils
Simon-Pierre Tremblay	Using shear wave velocity in detecting underground structures
Olivier Hurley	Physical modeling of stone column installation in fine sand and its effect on lateral to vertical stress ratio
Jerome Lapierre	Laboratory investigation on mechanical behavior of mineral wastes
Louis-Piérick Guay	Seismic analysis of pile foundations
Sabrine KHIR	Estimation of seismic coefficient of earth pressure using FLAC
Ismail Mohamed Aymen	Numerical investigation of kinematic soil-pile interaction.
Hala Abd Allah	Experimental investigation of grain size effects on shear wave velocity-void ratio correlation of Péribonka sand.

**List of references**

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1. Professor Susumu Iai,  
Director, Institute of Sustainability Science/Professor, Disaster Prevention Research Institute,  
Kyoto University, Gokasho, Uji 611-0011 Japan,  
E-mail: [iai.susumu.6x@kyoto-u.ac.jp](mailto:iai.susumu.6x@kyoto-u.ac.jp)
2. Professor Tetsuo Tobita,  
Disaster Prevention Research Institute, Kyoto University, Gokasho, Uji 611-0011 Japan,  
E-mail: [tobita.tetsuo.8e@kyoto-u.ac.jp](mailto:tobita.tetsuo.8e@kyoto-u.ac.jp)
3. Mourad Karray, ing., Ph.D.  
Professor, Department of Civil Engineering, Université de Sherbrooke, Sherbrooke (Québec)  
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