

## Assoc. Prof. Esra Ece Bayat

### Personal Information

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### International Researcher IDs

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Publons / Web Of Science ResearcherID: A-2119-2014

ScopusID: 16315912700

Yoksis Researcher ID: 115575

### Biography

Dr. Ece (Eseller) Bayat is currently Assistant Professor at Istanbul Technical University (ITU) Department of Civil Engineering, Istanbul, Turkey. She received her bachelor's degree in civil engineering from Middle East Technical University, Ankara, Turkey in 2002. She earned Master of Science and Ph.D. degrees in civil engineering at Northeastern University, Boston MA in 2004 and 2009, respectively. Her research is specialized in Geotechnical Earthquake Engineering, focusing on liquefaction of sands during earthquakes, liquefaction mitigation, shaking table testing of soils, nondestructive testing of large soil samples, and seismic evaluation of artifacts and estimation of site-specific soil behavior using downhole arrays. She has served as a research and teaching assistant for several years at Northeastern University. She teaches civil engineering classes at undergraduate and graduate levels. She served as Assistant to ITU president for strategic planning for two years. Currently she is vice dean of dual degree international programs at ITU. Her current research is funded by The Scientific and Technological Research Council of Turkey (TUBITAK) and recently received TUBITAK CAREER award. She has 6 technical papers in ASCE, ASTM and some other journals, and several papers in conference proceedings. She has given speeches in various outreach activities to attract middle and high school students' and minorities' interest in science and engineering. She is a member of Society of Women in Engineering (SWE) and also gave presentations in SWE regional conferences. She received college of engineering outstanding teaching assistant award in 2004. She is a member of Earthquake Engineering Research Institute (EERI) and American Society of Civil Engineers (ASCE). She is married and proud mother of two daughters called Ruya and Meyra.

### Education Information

Doctorate, Northeastern University, Geoteknik Deprem Mühendisliği, United States Of America 2004 - 2009

Postgraduate, Northeastern University, Geoteknik Deprem Mühendisliği, United States Of America 2002 - 2004

Undergraduate, Middle East Technical University, Faculty Of Engineering, Department Of Civil Engineering, Turkey 1997 - 2002

### Foreign Languages

English, C1 Advanced

## Dissertations

Doctorate, Seismic Response and Prevention of Liquefaction Failure of Sands Partially Saturated through Introduction of Gas Bubbles, Northeastern University, Geoteknik Deprem Mühendisliği, 2009  
Postgraduate, Induced Partial Saturation for Liquefaction Mitigation, Northeastern University, Geoteknik Deprem Mühendisliği, 2004

## Research Areas

Civil Engineering, Geotechnical, Soil Mechanics, Ground Improvement, Soil Dynamics, Engineering and Technology

## Academic Titles / Tasks

Associate Professor, Istanbul Technical University, İnşaat, İnşaat Mühendisliği, 2022 - Continues  
Assistant Professor, Istanbul Technical University, İnşaat, İnşaat Mühendisliği, 2018 - Continues  
Assistant Professor, Istanbul Technical University, İnşaat, İnşaat Mühendisliği, 2010 - 2018

## Courses

Foundation Engineering, Undergraduate, 2016 - 2017  
Soil Dynamics, Postgraduate, 2016 - 2017  
Foundation Dynamics, Doctorate, 2015 - 2016  
Soil Mechanics, Undergraduate, 2016 - 2017

## Published journal articles indexed by SCI, SSCI, and AHCI

- I. **An alternative empirical function to predict air-water mixture bulk modulus for numerical modeling of liquefaction behavior of induced partially saturated sands**  
Seyedi-Viand S. M., Bayat E. E.  
BULLETIN OF EARTHQUAKE ENGINEERING, vol.19, no.5, pp.1987-2011, 2021 (SCI-Expanded)
- II. **Geotechnical design with respect to TBDY-2018: Liquefaction and soil-pile -structure interaction analyses TBDY 2018'e Göre Geoteknik Tasarım: Sivilasma ve Yapı-Kazık-Zemin Etkilesimi Analizleri**  
Alver O., Sezen A., Bayat E. E.  
Teknik Dergi/Technical Journal of Turkish Chamber of Civil Engineers, vol.32, no.5, 2021 (SCI-Expanded)
- III. **Undrained Dynamic Response of Partially Saturated Sands Tested in a DSS-C Device**  
Bayat E. E., Gulen D. B.  
JOURNAL OF GEOTECHNICAL AND GEOENVIRONMENTAL ENGINEERING, vol.146, no.11, 2020 (SCI-Expanded)
- IV. **The Coupled Influence of Relative Density, CSR, Plasticity and Content of Fines on Cyclic Liquefaction Resistance of Sands**  
Bayat E. E., Monkul M. M., Akın Ö., Yenigün Ş.  
Journal Of Earthquake Engineering, vol.23, no.6, pp.909-929, 2019 (SCI-Expanded)
- V. **A methodology for estimation of site-specific nonlinear dynamic soil behaviour using vertical downhole arrays**  
Bayat E. E., Ada M.  
EUROPEAN JOURNAL OF ENVIRONMENTAL AND CIVIL ENGINEERING, 2019 (SCI-Expanded)
- VI. **Estimation of liquefaction potential from dry and saturated sandy soils under drained constant volume cyclic simple shear loading**  
MONKUL M. M., Gültekin C., Gülver M., Akın Ö., BAYAT E. E.  
Soil Dynamics And Earthquake Engineering, 2015 (SCI-Expanded)

- VII. **Liquefaction Response of Partially Saturated Sands. I: Experimental Results**  
Eseller-Bayat E. E., Yegian M. K., Alshawabkeh A., Gokyer S.  
JOURNAL OF GEOTECHNICAL AND GEOENVIRONMENTAL ENGINEERING, vol.139, no.6, pp.863-871, 2013 (SCI-Expanded)
- VIII. **Liquefaction Response of Partially Saturated Sands Experimental Results**  
Bayat E. E., Yegian M., Gökcyer S., Alshawabkeh A.  
Journal Of Geotechnical And Geoenvironmental Engineering, no.4, 2013 (SCI-Expanded)
- IX. **Liquefaction Response of Partially Saturated Sands. II: Empirical Model**  
Eseller-Bayat E. E., Yegian M. K., Alshawabkeh A., Gokyer S.  
JOURNAL OF GEOTECHNICAL AND GEOENVIRONMENTAL ENGINEERING, vol.139, no.6, pp.872-879, 2013 (SCI-Expanded)
- X. **Liquefaction Response of Partially Saturated Sands An Empirical Model**  
BAYAT E. E., Yegian M. K., Alshawabkeh A., Gokyer S.  
Journal Of Geotechnical And Geoenvironmental Engineering, 2013 (SCI-Expanded)
- XI. **Design and Application of Simple Shear Liquefaction Box**  
Bayat E. E., Gokyer S., Yegian M. K., Ortakçı E., Alshawabkeh A.  
Geotechnical Testing Journal, no.4, 2013 (SCI-Expanded)
- XII. **Bender Elements and Bending Disks for Measurement of Shear and Compression Wave Velocities in Large Fully and Partially Saturated Sand Specimens**  
Bayat E. E., Gokyer S., Yegian M. K., Deniz O. R., Alshawabkeh A.  
Geotechnical Testing Journal, no.4, 2013 (SCI-Expanded)
- XIII. **Induced Partial Saturation for Liquefaction Mitigation**  
Yegian M. K., Eseller Bayat E. E., Alshawabkeh A., Ali S.  
Journal Of Geotechnical And Geoenvironmental Engineering, no.4, 2007 (SCI-Expanded)

## Articles Published in Other Journals

- I. **Partial Saturation as a Liquefaction Countermeasure: A Review**  
Seyedi-Viand S. M., Eseller-Bayat E. E.  
Geotechnical and Geological Engineering, vol.40, no.2, pp.499-530, 2022 (ESCI)

## Refereed Congress / Symposium Publications in Proceedings

- I. **TBDY 2018'E GÖRE GEOTEKNİK TASARIM, SIVILAŞMAANALİZİ VE YAPI-ZEMİN-KAZIK ETKİLEŞİMİ ÖRNEĞİ:VAKA ANALİZİ**  
BAYAT E. E., SEZEN A., ALVER O.  
8. Uluslararası Geoteknik Sempozyumu, Turkey, 13 - 15 November 2019
- II. **Liquefaction responses of specimens prepared by IPS tested in DSS-C and shaking table**  
BAYAT E. E., gülen d. b.  
7th International Conference on Earthquake Geotechnical Engineering, Roma, Italy, 17 - 20 June 2019, vol.2, pp.2748-2755
- III. **HÜCRE BASINÇLI DİNAMİK BASİT KESME DENEY SİSTEMİNDE SIVILAŞMA DAVRANIŞININ İNCELENMESİ**  
gülen d. b., BAYAT E. E.  
Zemin Mekaniği ve Geoteknik Mühendisliği 17. Ulusal Konferansı, Turkey, 26 - 28 September 2018
- IV. **Importance of Automatization on Dry Funnel Deposited Specimens for Liquefaction Testing**  
Monkul M. M., Yenigün Ş., Eseller-Bayat E.  
5th Geotechnical Earthquake Engineering and Soil Dynamics Conference: Slope Stability and Landslides, Laboratory Testing, and In Situ Testing, GEESDV 2018, Texas, United States Of America, 10 - 13 June 2018, pp.286-

- V. **Evaluation of the Effect of Relative Density on Liquefaction Assessment of Sands with Plastic and Non-Plastic Fines**  
Bayat E. E., Monkul M. M., Akin O., Yenigun S.  
5th Geotechnical Earthquake Engineering and Soil Dynamics Conference (GEESD), Texas, United States Of America, 10 - 13 June 2018, pp.244-254
- VI. **Determining The Seismic Liquefaction Potential Of Dry Sand Specimens From Cyclic Simple Shear Tests**  
MONKUL M. M., YENİGÜN Ş., BAYAT E. E.  
7th Geotechnical Symposium with International Participation, İstanbul, Turkey, 22 - 24 November 2017
- VII. **Numerical Modelling of Liquefaction Tests of Partially Saturated Sands in CSSLB**  
SEYEDİ VİAND S. M., BAYAT E. E.  
Advances in Laboratory Testing and Modelling of Soils and Shales, Villar-sur-ollon, Switzerland, 18 - 20 January 2017, pp.501-508
- VIII. **Specimen Preparation Techniques for Testing Fully and Partially Saturated Sands in Dynamic Simple Shear (DSS) Test Device**  
GÜLEN d. b., BAYAT E. E.  
Advances in LABORATORY Testing and Modelling of Soils and Shales, Villar-sur-ollon, Switzerland, 18 - 20 January 2017, pp.139-146
- IX. **Zeminin Statik ve Dinamik Yükler Altında Davranışını Belirlemede Analitik ve Nümerik Analizlerin Karşılaştırılması Bir Vaka Analizi**  
BALCIOĞLU Ö., BAYAT E. E.  
Zemin Mekaniği ve Temel Mühendisliği Onbeşinci Ulusal Kongresi ZM15, Turkey, 16 - 17 October 2014
- X. **Liquefaction Analysis and Ground Improvement of Sakarya Karasu Region using Numerical Modelling FLAC 3D**  
Balcioğlu Ö., BAYAT E. E.  
2nd European Conference on Earthquake Engineering and Seismology, 25 - 29 August 2014
- XI. **Basit Kesme Deneyi için Homojen ve Suya Doygun Numune Hazırlama Yöntemleri**  
Akın Ö., MONKUL M. M., BAYAT E. E.  
5. Geoteknik Sempozyumu, Turkey, 5 - 07 December 2013
- XII. **Estimation of Dynamic Soil Properties using Downhole Acceleration Records**  
ADA M., BAYAT E. E., BULUT Y.  
Records'xx'xx International Conference on Earthquake Geotechnical Engineering: From Case History to Practice. June, 2013, 17 - 19 June 2013
- XIII. **Kuru huni yöntemiyle geniş aralıkta göreceli sıklık değerlerinin elde edilmesi**  
MONKUL M. M., YENİGÜN Ş., BAYAT E. E.  
Zemin Mekaniği ve Geoteknik Mühendisliği 17. Ulusal Konferansı, İstanbul, Turkey, 26 September 2018 - 28 September 2012, vol.3, pp.1249-1260
- XIV. **Prevention of Liquefaction during Earthquakes through Induced Partial Saturation in sands**  
BAYAT E. E., Yegian M. K., Gokyer S., Alshawabkeh A.  
21st European Young Geotechnical Engineers, 4 - 07 September 2011
- XV. **A New Mitigation Technique for Preventing Liquefaction Induced Building Damages during Earthquakes**  
BAYAT E. E., Yegian M. K., Alshawabkeh A., Gokyer S.  
Civil Engineering Disaster Mitigation Activities Concerning Earthquake and Tsunami WCCE-ECCE -TCCE Joint Conference, 22 - 24 June 2009
- XVI. **Liquefaction Mitigation Using Entrapped Air**  
BAYAT E. E., Yegian M. K., Alshawabkeh A.  
Northeast Geotechnical Research Symposium, University of Massachusetts, 26 October 2007
- XVII. **Bender Element Test Setup for Large Soil Specimens**  
DENİZ O., Yegian M. K., BAYAT E. E., Alshawabkeh A.

Northeast Geotechnical Research Symposium, University of Massachusetts, 26 October 2007

**XVIII. Preparation and Cyclic Testing of Partially Saturated Sands**

Yegian M. K., Eseller E. E., Alshawabkeh A.

Fourth International Conference on Unsaturated Soils ASCE Geotechnical Special Publication (GSP), 2 - 06 April 2006

## **Supported Projects**

Bayat E. E., Koçak M. B., Project Supported by Higher Education Institutions, Mevcut Bina Altındaki Kumların Sıvılaşabilirliğinin Değerlendirilmesi, 2017 - 2019

Bayat E. E., Project Supported by Higher Education Institutions, CSSLB düzeneğinde hazırlanmış suya doymuş kumların sıvılaşma deneylerinin sayısal modellemesi, 2016 - 2018

Bayat E. E., Project Supported by Higher Education Institutions, Kısmi Doymuş kumların farklı düşey gerilmelerde sıvılaşma davranışının Basit Dinamik Kesme Deney Aleti ile Belirlenmesi, 2016 - 2018

Bayat E. E., Project Supported by Higher Education Institutions, Dinamik Zemin Özelliklerinin Deprem İvme Kayıtları ile Tahmini, 2013 - 2018

Bayat E. E., Project Supported by Higher Education Institutions, Yarı Doymuş İndirgeme ( Induced Partial Saturation IPS Tekniği ile Deprem ile Deprem Sırasında Sıvılaşmanın Engellenmesi, 2011 - 2018

## **Memberships / Tasks in Scientific Organizations**

Zemin Mekaniği ve Geoteknik Mühendisliği, Member, 2010 - Continues

## **Metrics**

Publication: 42

Citation (WoS): 156

Citation (Scopus): 235

H-Index (WoS): 5

H-Index (Scopus): 7