

Dr. Aykut Erkal

Associate Professor of Civil Engineering

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EDUCATION

Post-Doctoral (2010 – 2012)

Department of Architecture and Civil Engineering,
University of Bath, United Kingdom

Post-Doctoral (2007 – 2010)

School of Architecture, Landscape, and Civil Engineering (SALCE),
University College Dublin (UCD), Ireland

PhD Degree (2001 – 2007)

Department of Civil Engineering, Boğaziçi University, İstanbul, Turkey
Infinite Elements in Finite Element Method, Thesis

Master's Degree (1998 – 2001)

Department of Civil Engineering, Boğaziçi University, İstanbul, Turkey
A Comparative Study of Passive Control Systems for Structures, Thesis

Bachelor's Degree: (1994 – 1998)

Department of Civil Engineering, Yıldız Technical University, İstanbul, Turkey

WORK EXPERIENCE

Position	Date	Company Name	Responsibilities
Visiting Researcher for 6 months	2015	University College Dublin	Research on the geometric and kinematic similitude of 4-storey reinforced-concrete small-scale frame models

Assistant Professor ----- Associate Professor	2012 -18 ----- 2018- current	Altınbaş Üniversitesi	<ul style="list-style-type: none"> ▶ Lectured Physics I, Introduction to Civil Engineering, Statics, Dynamics, Strength of Materials I & II, Structural Analysis I & II, Steel Structures, Computer Aided Structural Analysis, Design Project, Matrix Methods of Structural Analysis. ▶ Conducted scientific research on the protection of cultural heritage ▶ Principal (& sole) Investigator of the project titled “Hygrothermal Monitoring of the Timber Structures in İstanbul for Conservation (MOTIC)”. ▶ Collaborative Research Partner with University College Dublin, Ireland and University College London, UK ▶ Coordinator of Science Technology Society Seminars ▶ Turkish Coordinator of BRAU2-2nd Biennial of Architectural and Urban Restoration ▶ Member of the Faculty Counsel in the School of Engineering and Natural Sciences ▶ Erasmus Coordinator of the Department of Civil Engineering ▶ Advised approx. 70 students each year.
Research Associate	2010-12	University of Bath	<ul style="list-style-type: none"> ▶ Management of the research project PARNASSUS vis-a-vis protection of cultural heritage from wind-driven rain and flooding. ▶ Building Survey on-site ▶ Design of an environmental monitoring system in cooperation with 2 commercial companies for historic buildings in the UK. ▶ Monitoring system installation and data acquisition and its maintenance ▶ Numerical modelling of environmental effects on historic structures. ▶ Design of the website for the PARNASSUS project. ▶ Preparation of journal and conference papers ▶ Co-supervising final year students and PhD Students ▶ Awarded a grant by the European University Centre for Cultural Heritage to attend the meeting on <i>Climate change, cultural heritage and risk. Energy, mobility and access</i>, Ravello, ITALY, 3-7 October 2011
Postdoctoral Researcher	2008-10	University College Dublin SALCE	<ul style="list-style-type: none"> ▶ Authored a winning €107,410 research proposal from Enterprise Ireland, a major granting agency geared towards commercialisation of intellectual property ▶ Authored state-of-the-art review regarding

			<p>similitude in geotechnical testing, large-scale geotechnical testing, traffic vibrations</p> <ul style="list-style-type: none"> ▶ Reviewed technical papers ▶ Guest Lecturer in Building Construction (2nd year students in Civil Eng.) and Mechanics ▶ Assisted in coordination and day-to-day administration of a 7-person research group including preparation of grant applications ▶ Experimental and Numerical Modelling research in traffic-induced vibrations
Research & Teaching Assistant	2001-07	Bogazici University, Istanbul, Turkey	<ul style="list-style-type: none"> ▶ Conducted numerical modelling of buildings, bridges, and cooling towers ▶ Designed and participated in various small-scale engineering projects (retrofit of campus buildings) ▶ Taught Finite Element Method, Matrix Methods of Structural Analysis (Graduate students in Civil Eng.) and Engineering Graphics (1st year students in Civil Eng.) ▶ Research in Finite Element Modelling
Site Engineer	1996	Altınova Emlak Engineering Company, Turkey	<ul style="list-style-type: none"> ▶ Oversaw the construction of a group of 90 villa buildings and apartment buildings

PUBLICATIONS AND INTELLECTUAL PROPERTY

Book

Tezcan, S. & Erkal A., (2002), “*Seismic Base Isolation and Energy Absorbing Devices*”, Higher Edu. Fndn., Pub/No: KT 005/02, Etiler, İstanbul, <http://www.egitim-arvkfi.org>.

Refereed Journal Publications

Erkal A., 2022, “*Response of Little Hagia Sophia (Church of SS Sergius and Bacchus) to adjacent Train-induced Vibrations*”, Journal on Computing and Cultural Heritage. (Accepted) (SCI).

Erkal A., Kocagöz M. Ş., 2020, “*Interaction of Vibrations of Road and Rail Traffic with Buildings and Surrounding Environment*”, ASCE’s Journal of Performance of Constructed Facilities Vol.34 No.3 doi: 10.1061/(ASCE)CF.1943-5509.0001442, (SCI)

Erkal A., 2019, “*Impact of Traffic-Induced Vibrations on Residential Buildings and Their Occupants in Metropolitan Cities*”, Promet – Traffic & Transportation, Vol. 31, No. 3, pp.271-285, doi: 10.7307/ptt.v31i3.3000, (SCI).

Erkal A., 2017, “*Tren Geçişlerinin Küçük Ayasofya Cami Üzerinde ve Yanındaki Serbest Zemin Yüzeyinde Oluşturduğu Titreşimlerin Deneysel Olarak İncelenmesi*” (Experimental Investigation of Train-Induced Vibrations on And Around Little Hagia Sophia Mosque), Uludağ University Journal of The Faculty of Engineering, Vol.22, No.3, pp.361-374, doi:10.17482/uumfd.336345, ISSN 2148-4147, (Ulakbim).

- Erkal A.**, 2017, “*Transmission of traffic-induced vibrations on and around the minaret of Little Hagia Sophia*”, *International Journal of Architectural Heritage*, Vol.11, No.3 pp.349-362, doi:10.1080/15583058.2016.1230657, ISSN 1558-3058, (SCI).
- Laefer D. & **Erkal A.**, 2016, “*Selection, production, and testing of scaled reinforced concrete models and their components*”, *Construction and Building Materials*, Vol.126, pp.398–409, doi:10.1016/j.conbuildmat.2016.08.129, ISSN 0950-0618, (SCI).
- Erkal A.**, D’Ayala, D., 2015, “*Laboratory testing of non-standard original historic building materials and related implications for conservation*”, *Quarterly Journal of Engineering Geology and Hydrogeology*, Vol.48, No.1, pp.15–28, doi:10.1144/qjegh2013-078, ISSN 1470-9236, (SCI).
- Aktas Y. D., D’Ayala D., **Erkal A.**, Stephenson V., 2015, “*Environmental performance assessment using monitoring and DVS testing*, *Engineering*”, *History and Heritage ICE*, Vol.168, No.1, pp.3-16, doi:10.1680/ehah.14.00016, ISSN 1757-9430, (ESCI).
- Parkin S. J., Adderley W. P., Kennedy C. J., Aktas Y. D., D’Ayala D., **Erkal A.**, 2015, “*Climate threats to the earth-built heritage of Scotland*”, *Engineering History and Heritage ICE*, Vol.168, No.1, pp.17-30, doi:10.1680/ehah.14.00017, ISSN 1757-9430, (ESCI).
- Erkal A.**, Laefer D. & Tezcan S., 2015, “*Advantages of infinite elements over prespecified boundary conditions in unbounded problems*”, *ASCE’s Journal of Computing in Civil Engineering*, Vol.29, No.6, doi:10.1061/(ASCE)CP.1943-5487.0000391, ISSN 0887-3801, (SCI).
- Erkal A.** and Ozhan H.O., 2014, “*Value and vulnerability assessment of a historic tomb for conservation*”, *The Scientific World Journal*, Vol.2014, Article ID 357679, 10 pages, doi:10.1155/2014/357679, ISSN 2356-6140, (SCI).
- Erkal A.**, D’Ayala, D., Stephenson, V., 2013, “*Evaluation of environmental impact on historical stone masonry through on-site monitoring appraisal*”, *Quarterly Journal of Engineering Geology and Hydrogeology*, Vol.46, No.4, pp.449-458, doi:10.1144/qjegh2012-060, ISSN 1470-9236, (SCI).
- Erkal A.**, D’Ayala, D., Sequeira L., 2012, “*Assessment of wind-driven rain impact, related surface erosion and surface strength reduction of historic building materials*”, *Building and Environment*, Vol.57, pp.336-348, doi:10.1016/j.buildenv.2012.05.004, ISSN 0360-1323, (SCI).
- Laefer, D., Long, J., **Erkal A.**, Cording E. & Truong Hong, 2011, “*Manufacturing, assembly, and testing of scaled, historic masonry for one-gravity, pseudo-static, soil-structure experiments*”, *Construction and Building Materials*, Vol.25, No.12, pp.4362-4373, doi:10.1016/j.conbuildmat.2011.03.066, ISSN 0950-0618, (SCI).
- Erkal A.**, Tezcan, S. & Laefer D., 2011, “*Assessment and code considerations for the combined effect of seismic base isolation and viscoelastic dampers*”, *ISRN Civil Engineering Journal*, Vol.2011, Article ID 861451, 10 pages, doi:10.5402/2011/861451, ISSN 2356-7872.
- Laefer, D., **Erkal A.**, Long, J., Cording E. & Truong Hong, 2010, “*Theoretical solutions for strength-scaled unreinforced masonry for scaled soil-structure experimentation*”, *ASTM, Journal of Testing and Evaluation*, Vol.38, No.4, pp.449-457, doi:10.1520/JTE102420, ISSN 0090-3973, (SCI).
- Aras, F. & **Erkal A.**, 2022, “*Assessment of Historic Civil Buildings in Istanbul for Their Sustainable Conservation*”, *Vernacular Architecture*. (In Review) (SCI).

Conference Papers

- Erkal A.**, “*Cultural Significance and Structural Stability of Historic Masonry Open Tombs in Istanbul*”, 12th International Conference on Structural Analysis of Historical Constructions, SAHC 2020, 29 September – 1 October 2021, Barcelona, Spain (Accepted to be presented).
- Erkal A.** and Ozhan H.O., “*Engineering Risk Assessment and Cultural Analyses of Historic Nisanci Hamza Pasa Tomb in Istanbul*”, 2nd Specialty International Conference on Monumental Cemeteries: Knowledge, Conservation and Restyling, 10-12 May 2013, pp.1-8, Ostuni, Italy.
- D’Ayala, D. Aktas Y.D., Earl G., **Erkal A.**, Miles J., Richley E., Stephenson V., Strutt K., “*The Parnassus Project: Archaeology and Engineering Collaboration for 3D Data Collection and Analysis*”, Across Space and Time. Papers from the 41st Annual Conference of Computer Applications and Quantitative Methods in Archaeology (CAA), Edited by Traviglia, A., Perth, Australia, 25-28 March 2013, Amsterdam University Press.
- Herdt G., **Erkal A.**, D’Ayala D.& Jones M. W. “*Structural Assessment of Ancient Building Components, the Temple of Artemis at Corfu*”, the 40th Conference on Computer Applications and Quantitative Methods in Archaeology (CAA), , Edited by Graeme Earl, Tim Sly, Angeliki Chrysanthi, Patricia Murrieta-Flores, Constantinos Papadopoulos, Iza Romanowska and David Wheatley, University of Southampton, United Kingdom, 26-30 March 2012, Amsterdam University Press.
- D’Ayala, D., **Erkal, A.**, “*The Role of Environmental Monitoring in Conservation of Cultural Heritage*”, WCCE-ECCE-TCCE Joint Conference 2, Seismic Protection of Cultural Heritage, Antalya, Turkey, 31 October - 1 November 2011.
- Erkal, A.**, Laefer D., Fanning, P., Durukal, E., Hancilar, U., Kaya, Y., “*Investigation of the Rail-induced Vibrations on a Masonry Historical Building*”, 7th International Conference on Structural Analysis of Historic Constructions (SAHC-2010 Conference), Shanghai, China, October 6-8, 2010, Vol.: 133-134, pp: 569-574.
- Erkal, A.**, Laefer D., Fanning, P., Durukal, E., Hancilar, U., Kaya, Y., “*Factors Affecting Traffic-generated Vibrations on Buildings and a Case Study: Minaret of Little Hagia Sophia Mosque*”, Bridge & Infrastructure Research in Ireland 2010 and Concrete Research in Ireland, A joint Symposium co-hosted by UCC and CIT, Cork, 2-3 September 2010.
- Erkal, A.**, Laefer, D., and Fanning, P., “*Analyses and evaluation of building response to traffic-induced vibrations and related human disturbance*”, The Transportation Research Board (TRB) 89th Annual Meeting, Washington, D.C., USA, 10-14 January 2010.
- Erkal, A.**, Tezcan, S., “*Seismic Base Isolation and Energy Absorbing Devices*”, International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering, Rethymno, Crete, Greece, 13-16 June 2007.
- Tezcan, S., Ozdemir, Z., Keceli, A., and **Erkal A.**, “*Case Studies: A rapid technique to determine allowable bearing pressure*”, Geotechnical Special Publication (GPS 175), p.66, FMGM 2007 – Proceedings of the 7th International Symposium on Field Measurements in Geomechanics, Boston, MA, U.S.A., 24 – 27 September 2007, pp.66-72.
- Tezcan, S., Yazıcı, A., Özdemir Z. and **Erkal A.**, “*Weak Storey – Soft Storey Irregularity*”, 6th National Conference on Earthquake Engineering, İstanbul Technical University, Süleyman Demirel Culture Center, Maslak, İstanbul, 16-20 October 2007, pp.339-350.

Tezcan, S., Ozdemir, Z., Keceli, A., and **Erkal A.**, “*A Rapid Technique to Determine Allowable Bearing Pressure*”, International Earthquake Symposium, Earth and Space Sciences Research Center, Kocaeli University, Kocaeli, 22-26 October 2007, pp.234-241.

Reports

D’Ayala, D., **Erkal, A.**, “*The PARNASSUS Project, Risk of Climate Change*”, **care** Conservation Accreditation Register for Engineers newsletter, Institution of Civil Engineers, Autumn/Winter 2011, pp.10-13.

SUPERVISED MASTER’S THESIS

Co-advisor of Cihan Calp, 2018, “Dynamic Properties of the Historic Minarets and Their Earthquake Performance”, Master’s Thesis, Graduate School, İstanbul Technical University (İTÜ), İstanbul.