

Exponent®
Engineering & Scientific Consulting

Ezra Y. S. Tjung, Ph.D., P.E.

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Professional Profile

Dr. Tjung specializes in soil mechanics, geotechnical engineering, foundation engineering, earthquake engineering, and computational geomechanics. He has experience on both domestic and international projects including design of new high-rise structures, deep excavations, slope stabilization, retaining walls, failure analysis of dams and slope, and retrofitting of existing structures.

In his projects, Dr. Tjung has incorporated advanced numerical modeling through powerful tools that allowed to accurately analyze complex geotechnical problems. Additionally, he also has experience in data analysis and sustainable design.

Dr. Tjung's experience includes planning and management of geotechnical ground investigations, and design of engineering systems, including deep excavation support, slope stabilization measures, structural foundations, and retaining walls. He has extensive experience performing foundation assessments, evaluation of dams and levees, planning and management of monitoring data, liquefaction assessment, conservation of historic structures, and liaising with office staff, contractors on site, and project management.

Dr. Tjung's has extensive experience modeling large deformation problems in geomechanics using the Material Point Method. With this method, he successfully simulated sand production behavior in an oil rig, 2D and 3D flow of dry sand in laboratory flume experiment, and 3D historical debris flow. Dr. Tjung also initiated the use of the Material Point Method for earthquake applications including a back-analysis study of a liquefaction-induced dam failure. He has in-depth knowledge and experienced with advanced constitutive models based on the critical state understanding for cohesive and dilative behavior of rocks.

At the University of California, Berkeley, Dr. Tjung served as a Graduate Student Researcher (or Research Assistant) and was the Graduate Student Instructor (or Teaching Assistant) for six graduate and undergraduate courses in soil mechanics, geotechnical earthquake engineering, geotechnical ground investigation and laboratory testing, numerical modeling in geotechnical engineering, and numerical analysis. He also held positions in the Graduate Assembly as a delegate of the Civil and Environmental Engineering Department and was one of the founding members of the GeoEngineering Graduate Student Association at U.C. Berkeley, where he organized the Geotechnical Engineering Annual Research Symposium for the university.

Currenly, Dr. Tjung also serves as a lecturer in Smart Construction and Civil Engineering Department of Calvin Institute of Technology in Jakarta, Indonesia. He is teaching undergraduate courses including foundation engineering, statics and mechanics of materials, and numerical analysis.

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Academic Credentials & Professional Honors

Ph.D., Civil and Environmental Engineering, University of California, Berkeley, 2020

M.S., Civil and Environmental Engineering, University of California, Berkeley, 2016

B.Eng., Civil and Environmental Engineering, Hong Kong University of Science and Tech, 2014

Australian Geotechnical Society Scholarship for the ICSMGE 2022 Conference, 2022

Exponent Excellent Award, 2021

Graduate Assembly Travel Award, 2020

Graduate Division Travel Grant (2 times), 2019 and 2020

Jane Lewis Fellowship, University of California, Berkeley, 2016-2018

Civil and Environmental Engineering Outstanding GSI Award, University of California, Berkeley, 2018

Outstanding Graduate Student Instructor Award, University of California, Berkeley, 2018

Tor L. Brekke Award, University of California, Berkeley, 2016

Harry Bolton Seed Memorial Fellowship, University of California, Berkeley, 2015

AECOM Prize for Best Students of the Year 2014

HKUST Academic Achievement Medal (Summa Cum Laude), HKUST, 2014

HKUST President's Cup – Gold Award, 2014

Lo Bo Wing Memorial Exchange Scholarship, HKUST, 2013

HKSAR Reaching Out Activities Scholarship, HKUST, 2013

HKSAR Government Scholarship, HKUST, 2012

Hong Kong Institute of Engineers (HKIE) Scholarship, HKUST, 2012

University Scholarship, HKUST, 2011

Licenses and Certifications

Professional Engineer Civil, Arizona, #84356

Professional Engineer Civil, California, #89298

Professional Engineer Civil, Nevada, #033509

Professional Engineer Civil and Structural, New Jersey, #24GE06348000

Professional Engineer Civil, Texas, #149409

LEED Accredited Professional

Academic Appointments

Lecturer, Smart Construction and Civil Engineering, Calvin Institute of Technology, 2020-Present

Graduate Student Researcher (Research Assistant), Civil & Environmental Engineering Department, University of California, Berkeley, 2017-2020

Graduate Student Instructor (Teaching Assistant), Civil & Environmental Engineering Department, University of California, Berkeley, 2016-2019

Prior Experience

Rockridge Geotechnical, Staff Engineer, 2016

Arup, Graduate Engineer, 2014-2015

VSL & Intrafor, Intern, 2013-2014

Professional Affiliations

American Society of Civil Engineers (ASCE) – Golden Gate Chapter

American Society of Civil Engineers (ASCE)

International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE)

Young Member Presidential Group - ISSMGE

Earthquake Engineering Research Institute (EERI)

Natural Hazards Engineering Research Infrastructure (NHERI)

Hong Kong Institution of Engineers (HKIE)

The Institution of Engineers Indonesia (PII)

The Institution of Engineers Indonesia (PII) – Chapter USA

Indonesian Society for Geotechnical Engineer (HATTI)

Languages

Malay

Bahasa (Indonesian)

Publications

Talbot, L. E. D., Given, J., Liang, Y., Tjung, E. Y. S., Chowdhury, K., Seed, R., and Soga, K. (2024). “Large-Deformation Simulation of the Lower San Fernando Dam Using the Material Point Method”, Computers and Geotechnics, Volume 165, January 2024, 105881.

Talbot, L. E. D., Given, J., Liang, Y., Tjung, E. Y. S., Chowdhury, K., Seed, R. B. and Soga, K. (2024). “Large-Deformation Simulation of the Lower San Fernando Dam Using the Material Point Method”, Geo-Congress 2024 Proceedings.

Sunanhadikusuma, A. Y., Tjung, E. Y. S., & Lim, A. (2023). “Comparison of Material Point Method and Finite Element Method for Post-Failure Large Deformation Geotechnical Analysis,” Journal of the Civil Engineering Forum (pp. 1-10).

Seed, R.B., Chowdhury, K., Dawson, E., Weber, J., Perlea, V., Soga, K., Tjung, E.Y.S., 2021. The upper and lower San Fernando Dams: 50 years of advances in seismic analysis of dams potentially susceptible to seismic soil liquefaction [unpublished manuscript]. Unpublished. https://seattlegeotech.org/wp-content/uploads/

Given, J., Kularathna, S., Tjung, E. Y. S., Chandra, B., Soga, K., Wang, H., Morgan, S., Meier, H., and Garzon, J. (2022), "Modeling Wellbore Erosion Using Standard and Cut-Mesh Approaches in Material Point Method," Geo-Congress 2022 Proceedings, Charlotte, North Carolina.

Tjung, E. Y. S., Kularathna, S., Kumar, K., & Soga, K. (2020). "Modeling irregular boundaries using isoparametric elements in the Material Point Method." Geo-Congress 2020 Proceedings, Minneapolis, MN, USA.

Kumar, K., Salmond, J., Wilkes, C., Tjung, E. Y. S., Biscontin, G., & Soga, K. (2019). "Scalable and modular Material Point Method for large-scale simulations." MPM2019 Conference, Cambridge, UK.

Tjung. E. Y. S. (2014). "The implementation of Microelectromechanical Systems (MEMS) sensors for slope stability monitoring." President's Cup Report. HKUST Library.

Tjung, E. Y. S., Kaufmann, D., & Littman, M. G. (2014). "Joseph Henry's house and plan for the Princeton Campus." Journal of the Washington Academy of Sciences, 100(3), 49-72.

Presentations

Tjung, E. Y. S. “Evaluating Seepage Behavior from Fluctuating River Levels.” Geotechnical Graduate Student Society (GGSS) at the University of California, Davis, 2023.

Seed, R., Chowdhury, K., Dawson, E., Weber, J., Perlea, V., Soga, K., Tjung, E. Y. S., (2022), "The Upper and Lower San Fernando Dams: 50 Years of Advances in Seismic Analysis of Dams Potentially Susceptible to Seismic Soil Liquefaction."

Tjung, E. Y. S, Kularathna, S., Kumar, K., & Soga, K. "Modeling irregular boundaries using isoparametric elements in the Material Point Method." Geo-Congress 2020, Minneapolis, MN, USA.

Tjung, E. Y. S. "Material Point Method for large deformation modeling in geomechanics using isoparametric elements." Tokyo City University, Tokyo, Japan, 2019.

Tjung, E. Y. S. "Material Point Method for large deformation modeling in geomechanics using isoparametric elements." Japanese Geotechnical Society (JGS) at Yamaguchi University, Yamaguchi, Japan, 2019.

Tjung, E. Y. S. "Modeling irregular boundaries using isoparametric elements in Material Point Method." 12th MPM Workshop, Blacksburg, VA, USA.

Tjung, E. Y. S. "Material Point Method for large deformation modeling in geomechanics using isoparametric elements." University of California, Berkeley - 3rd Annual Research Symposium, Berkeley, CA, 2019.

Tjung, E. Y. S. "Material Point Method for large deformation." University of California, Berkeley - 2nd Annual Research Symposium, Berkeley, CA, 2018

Additional Education & Training

Certificate of Teaching and Learning in Higher Education, University of California, Berkeley, 2018

Peer Reviews

Journal of Soils and Foundations (Elsevier)

American Journal of Civil Engineer (Science Publishing Group)