

DAFTAR PUSTAKA

- Ahmadi, E., Khoshnoudian, F., Hosseini, M., 2015. Importance of soil material damping in seismic responses of soil-MDOF structure systems. *Soils and Foundations* 55, 35–44. <https://doi.org/10.1016/j.sandf.2014.12.003>
- Ahmadi, E., Kiani, M., Paytam, F., Khoshnoudian, F., 2018. Equivalent linearization parameters of soil-MDOF structure systems subjected to pulse-like earthquakes. *Soils and Foundations* 58, 1371–1382. <https://doi.org/10.1016/j.sandf.2018.08.006>
- AISC, 2016. *Seismic Provisions for Structural Steel Buildings Supersedes the Seismic Provisions for Structural Steel Buildings*. Chicago.
- Badan Standardisasi Nasional, 2019. *Tata Cara Perencanaan Ketahanan Gempa untuk Struktur Bangunan Gedung dan Non Gedung (SNI 1726:2019)*. BSN, Jakarta.
- Bhatia, M., Ahanger, T.A., Manocha, A., 2023. Artificial intelligence based real-time earthquake prediction. *Eng. Appl. Artif. Intell.* 120. <https://doi.org/10.1016/j.engappai.2023.105856>
- Bigdeli, A., Akbari, H., Alembagheri, M., Haghgou, H., Matinfar, M., 2023. Influence of near-field ground motions and their equivalent pulses on nonlinear seismic response of intake-outlet towers and predicting based on artificial neural networks. *Structures* 52, 1051–1070. <https://doi.org/10.1016/j.istruc.2023.04.019>
- BMKG, 2025. *Data Gempabumi Terbuka BMKG [WWW Document]*. URL <https://data.bmkg.go.id/gempabumi/> (accessed 6.24.25).
- Brigham, E.O., 1988. *The Fast Fourier Transform and Its Applications*. Prentice Hall.
- Campbell, K.W., Bozorgnia, Y., 2010. A Ground Motion Prediction Equation for JMA Instrumental Seismic Intensity for Shallow Crustal Earthquakes in Active Tectonic Regimes. *Earthq. Eng. Struct. Dyn.* 40, 413–427. <https://doi.org/10.1002/eqe.1027>
- Cao, X., Wang, S., Gong, W., Wu, W., Dai, G., Zhou, F., 2022. Experimental and theoretical study on dynamic stiffness of floating single pile and pile groups in multi-layered soil. *Soil Dynamics and Earthquake Engineering* 157. <https://doi.org/10.1016/j.soildyn.2022.107282>

- Chang, D.W., Cheng, S.H., Wang, Y.L., 2014. One-dimensional wave equation analyses for pile responses subjected to seismic horizontal ground motions, in: *Soils and Foundations*. Japanese Geotechnical Society, pp. 313–328. <https://doi.org/10.1016/j.sandf.2014.04.018>
- Chollet, F., 2021. *Deep Learning with Python*, 2nd ed. Manning Publications Co., Shelter Island, NY 11964.
- Chopra, A.K., 2020. *Dynamics of structures: theory and applications to earthquake engineering*, 5th ed. Pearson Education, Inc., Harlow CM17 9NA.
- Dai, J.C., Wang, D.S., Tang, W.J., Zou, Y.H., Hui, Y.X., Zhang, Y.J., 2024. Parameter-normalized probabilistic seismic demand model considering the structural design strength for structural response assessment. *Soil Dynamics and Earthquake Engineering* 187. <https://doi.org/10.1016/j.soildyn.2024.109023>
- Díaz, J.P., Sáez, E., Monsalve, M., Candia, G., Aron, F., González, G., 2022. Machine learning techniques for estimating seismic site amplification in the Santiago basin, Chile. *Eng. Geol.* 306. <https://doi.org/10.1016/j.enggeo.2022.106764>
- El-Azab, M.S., Mahmoud, S., Abd-Elhameed, A., 2011. Seismic response evaluation of buildings considering soil flexibility. *Adv. Mat. Res.* 243–249, 1383–1390. <https://doi.org/10.4028/www.scientific.net/AMR.243-249.1383>
- Erdik, M., Ülker, Ö., Şadan, B., Tüzün, C., 2018. Seismic isolation code developments and significant applications in Turkey. *Soil Dynamics and Earthquake Engineering* 115, 413–437. <https://doi.org/10.1016/j.soildyn.2018.09.009>
- Fajfar, P., 2018. Analysis in seismic provisions for buildings: past, present and future: The fifth Prof. Nicholas Ambraseys lecture. *Bulletin of Earthquake Engineering* 16, 2567–2608. <https://doi.org/10.1007/s10518-017-0290-8>
- Falcone, R., Ciaramella, A., Carrabs, F., Strisciuglio, N., Martinelli, E., 2022. Artificial neural network for technical feasibility prediction of seismic retrofitting in existing RC structures. *Structures* 41, 1220–1234. <https://doi.org/10.1016/j.istruc.2022.05.008>
- FEMA, 2005. *Improvement of nonlinear static seismic analysis procedures (FEMA 440)*, 1st ed. Federal Emergency Management Agency, Redwood City.

- Friedman, 2001. Greedy function approximation: A gradient boosting machine. *Ann. Statist* 29, 1189–1232. <https://doi.org/https://doi.org/10.1214/aos/1013203451>
- Froozanfar, M., Moradi, S., Kianoush, R., Speicher, M.S., Di Sarno, L., 2024. Review of self-centering rocking systems for earthquake-resistant building structures: State of the art. *Journal of Building Engineering* 84. <https://doi.org/10.1016/j.jobe.2024.108607>
- Fujimoto, K., Midorikawa, S., 2010. Empirical relationship between JMA instrumental seismic intensity and ground motion parameters considering the effect of earthquake magnitude (In Japanese). *Journal of Japan Association for Earthquake Engineering* 10, 1–11. https://doi.org/http://dx.doi.org/10.5610/jaee.10.2_1
- Gan, B.S., 2023. Design concepts for seismic-resistant buildings : Quantitative shaking evaluations, 1st ed. Cambridge Scholars Publishing, Newcastle upon Tyne.
- He, Y., Li, S., Wei, Y., Xie, L., 2023. A novel strong ground motion duration to reduce computation time of structural time history analysis. *Soil Dynamics and Earthquake Engineering* 164. <https://doi.org/10.1016/j.soildyn.2022.107641>
- Ishikawa, T., Yoshimi, M., Isobe, K., Yokohama, S., 2021. Reconnaissance report on geotechnical damage caused by 2018 Hokkaido Eastern Iburi earthquake with JMA seismic intensity 7. *Soils and Foundations* 61, 1151–1171. <https://doi.org/10.1016/j.sandf.2021.06.006>
- Ishimoto, M., 1932. Echelle d'intensite Seismique et acceleration maxima. *Institut de Recherches sur les Tremblements de terre X*, 614–626.
- Japan Meteorological Agency, 2023. Major damaging earthquakes that occurred in Japan after 1996 [WWW Document]. URL <https://www.data.jma.go.jp/svd/eqev/data/higai/higai1996-new.html> (accessed 8.29.23).
- Japan Meteorological Agency, 2019a. Tables explaining the JMA Seismic Intensity Scale.
- Japan Meteorological Agency, 2019b. Summary of Tables explaining the JMA Seismic Intensity Scale - Feb 2019 [WWW Document]. Summary of Tables explaining the JMA Seismic Intensity Scale. URL <https://www.jma.go.jp/jma/en/Activities/intsummary.pdf> (accessed 2.10.23).

- Japan Meteorological Agency, 2010. What is an earthquake early warning? (緊急地震速報 (Kinkyu Jishin Sokuho) in Japanese) [WWW Document]. Japan Meteorological Agency. URL <https://www.jma.go.jp/jma/en/Activities/eew1.html> (accessed 12.14.23).
- Johnson, P.A., Rouet-Leduc, B., Pyrak-Nolte, L.J., Beroza, G.C., Marone, C.J., Hulbert, C., Howard, A., Singer, P., Gordeev, D., Karaflos, D., Levinson, C.J., Pfeiffer, P., Puk, K.M., Reade, W., 2021. Laboratory earthquake forecasting: A machine learning competition, in: Proceedings of the National Academy of Sciences of the United States of America. National Academy of Sciences. <https://doi.org/10.1073/pnas.2011362118>
- Karim, K.R., Yamazaki, F., 2002. Correlation of JMA instrumental seismic intensity with strong motion parameters. *Earthq. Eng. Struct. Dyn.* 31, 1191–1212. <https://doi.org/10.1002/eqe.158>
- Kawasumi, 1943. Seismic intensity and seismic intensity scale. *Earthquake* 15, 6–12.
- Kodera, Y., Saitou, J., Hayashimoto, N., Adachi, S., Morimoto, M., Nishimae, Y., Hoshiba, M., 2016. Earthquake early warning for the 2016 Kumamoto earthquake: Performance evaluation of the current system and the next-generation methods of the Japan Meteorological Agency 2016 Kumamoto earthquake sequence and its impact on earthquake science and hazard assessment Manabu Hashimoto, Martha Savage, Takuya Nishimura and Haruo Horikawa 4.*Seismology. Earth, Planets and Space* 68. <https://doi.org/10.1186/s40623-016-0567-1>
- Kramer, S.L., 1996. *Geotechnical earthquake engineering*, 1st ed. Prentice-Hall, Upper Saddle River.
- Kubo, T., Hisada, Y., Murakami, M., Kosuge, F., Hamano, K., 2011. Application of an earthquake early warning system and a real-time strong motion monitoring system in emergency response in a high-rise building. *Soil Dynamics and Earthquake Engineering* 31, 231–239. <https://doi.org/10.1016/j.soildyn.2010.07.009>
- Li, L., Jin, F., Huang, D., Wang, G., 2023. Soil seismic response modeling of KiK-net downhole array sites with CNN and LSTM networks. *Eng. Appl. Artif. Intell.* 121. <https://doi.org/10.1016/j.engappai.2023.105990>

- Li, S., Chen, Y., Yu, T., 2021. Comparison of macroseismic-intensity scales by considering empirical observations of structural seismic damage. *Earthquake Spectra* 37, 449–485. <https://doi.org/10.1177/8755293020944174>
- Li, Z., Escoffier, S., Kotronis, P., 2020. Study on the stiffness degradation and damping of pile foundations under dynamic loadings. *Eng. Struct.* 203. <https://doi.org/10.1016/j.engstruct.2019.109850>
- Liu, X., Zhao, Y., Lu, T., Xu, H., Yang, L., 2023. Closed-form dynamic stiffness formulation for modal and dynamic response analysis of pile group foundations. *Comput. Geotech.* 159. <https://doi.org/10.1016/j.compgeo.2023.105481>
- Luo, H., Paal, S.G., 2022. Artificial intelligence-enhanced seismic response prediction of reinforced concrete frames. *Advanced Engineering Informatics* 52. <https://doi.org/10.1016/j.aei.2022.101568>
- Mârmureanu, A., Ionescu, C., Cioflan, C.O., 2011. Advanced real-time acquisition of the Vrancea earthquake early warning system. *Soil Dynamics and Earthquake Engineering* 31, 163–169. <https://doi.org/10.1016/j.soildyn.2010.10.002>
- Momeni, E., Jahed, D., Aydin, A., Editors, A., 2023. *Artificial Intelligence in Mechatronics and Civil Engineering*, 1st ed. Springer Nature Singapore, Singapore. <https://doi.org/https://doi.org/10.1007/978-981-19-8790-8>
- Mukunoki, T., Kasama, K., Murakami, S., Ikemi, H., Ishikura, R., Fujikawa, T., Yasufuku, N., Kitazono, Y., 2016. Reconnaissance report on geotechnical damage caused by an earthquake with JMA seismic intensity 7 twice in 28 h, Kumamoto, Japan. *Soils and Foundations* 56, 947–964. <https://doi.org/10.1016/j.sandf.2016.11.001>
- National Research Institute for Earth Science and Disaster Resilience, 2020. K-NET & KiK-net Easy Download [WWW Document]. K-NET & KiK-net Data.
- National Research Institute for Earth Science and Disaster Resilience, 2019. Disaster prevention research K-NET, KiK-net [WWW Document]. Disaster prevention research K-NET, KiK-net. <https://doi.org/10.17598/nied.0004>
- National Research Institute for Earth Science and Disaster Resilience, 2012. Introduction: About K-NET and KiK-net [WWW Document]. Strong-motion Seismograph Networks (K-NET, KiK-net). URL

- https://www.kyoshin.bosai.go.jp/kyoshin/docs/overview_kyoshin_index_en.html
(accessed 11.15.23).
- Nicolis, O., Plaza, F., Salas, R., 2021. Prediction of intensity and location of seismic events using deep learning. *Spat. Stat.* 42. <https://doi.org/10.1016/j.spasta.2020.100442>
- Nouchi, E., Egatama, H.F., Wariyatno, N.G., Gan, B.S., Professor, A., 2023. AI (DNN) for predicting quantitative building floors shaking during an earthquake, in: *The 16th Japan Earthquake Engineering Symposium*.
- Nugroho, W.O., Sagara, A., Imran, I., 2022. The evolution of Indonesian seismic and concrete building codes: From the past to the present. *Structures* 41, 1092–1108. <https://doi.org/10.1016/j.istruc.2022.05.032>
- Otani, S., 2004. Earthquake resistant design of reinforced concrete buildings past and future, *Journal of Advanced Concrete Technology*.
- Plevris, V., Ahmad, A., Lagaros, N.D., 2023. *Artificial intelligence and machine learning techniques for civil engineering*, 1st ed. IGI Global, Hershey PA.
- Poulos, H.G., 2022. Use of shear wave velocity for foundation design. *Geotechnical and Geological Engineering* 40, 1921–1938. <https://doi.org/10.1007/s10706-021-02000-w>
- Sakai, A., 2018a. A method of expressing seismic intensity for a wider period range. *The International Journal of Engineering and Science (IJES)* 7, 34–51. <https://doi.org/10.9790/1813-0705023451>
- Sakai, A., 2018b. Generalization of calculation method for seismic intensity using filtered acceleration. <https://doi.org/10.9790/1813-0705023451>
- Sakai, A., 2015. An expression of the seismic intensity level for long-period ground motion. *Journal of Japan Society of Civil Engineers* 3, 160–173. https://doi.org/https://doi.org/10.2208/journalofjsce.3.1_160
- Sakai, M., Gan, B.S., 2025. Smart monitoring of seismic intensity in real time: A SIL-based approach using embedded acceleration sensor and custom signal processing, in: *TAETI (Ed.), The 10th International Conference on Advanced Technology Innovation 2025 (ICATI2025)*. TAETI.

- Sarum Hardwood Structures LTD, 2017. Structural use of hardwoods, SHS Technical Information.
- Shabestari, K.T., Yamazaki, F., 2001. A proposal of instrumental seismic intensity scale compatible with MMI evaluated from three-component acceleration records. *Earthquake Spectra* 17, 711–723. <https://doi.org/10.1193/1.1425814>
- Sharma, N., Dasgupta, K., Dey, A., 2025. Influence of soil-pile foundation-structure interaction on the ductility capacity of RC buildings. *Structures* 77. <https://doi.org/10.1016/j.istruc.2025.109168>
- Sokolov, V., Furumura, T., 2008. Comparative analysis of two methods for instrumental intensity estimations using the database accumulated during recent large earthquakes in Japan. *Earthquake Spectra* 24, 513–532. <https://doi.org/10.1193/1.2923918>
- Sokolov, V., Furumura, T., Wenzel, F., 2010. On the use of JMA intensity in earthquake early warning systems. *Bulletin of Earthquake Engineering* 8, 767–786. <https://doi.org/10.1007/s10518-010-9178-6>
- Song, J., Wu, K., Qi, F., 2023. Effects of site response on ground motion directionality based on KiK-net records and numerical analysis. *Soil Dynamics and Earthquake Engineering* 174. <https://doi.org/10.1016/j.soildyn.2023.108205>
- Sun, Z., Cristea, N., 2023. Introduction of artificial intelligence in Earth sciences, in: Sun, Z., Cristea, N., Rivas, P. (Eds.), . Elsevier, Cambridge, MA 02139. <https://doi.org/https://doi.org/10.1016/B978-0-323-91737-7.00003-7>
- Sutaih, G.H., Aggour, M.S., 2022. Frequency-independent dynamic stiffness and damping of laterally loaded single piles. *Soil Dynamics and Earthquake Engineering* 162. <https://doi.org/10.1016/j.soildyn.2022.107472>
- Tajima, F., Hayashida, T., 2018. Earthquake early warning: what does “seconds before a strong hit” mean? *Prog. Earth Planet. Sci.* 5. <https://doi.org/10.1186/s40645-018-0221-6>
- The MathWorks, 2017a. What are convolutional neural networks? | Introduction to deep learning [WWW Document]. MathWorks. URL

- <https://www.mathworks.com/videos/introduction-to-deep-learning-what-are-convolutional-neural-networks--1489512765771.html> (accessed 12.21.23).
- The MathWorks, 2017b. Learn about convolutional neural networks [WWW Document]. MathWorks. URL <https://www.mathworks.com/help/deeplearning/ug/introduction-to-convolutional-neural-networks.html> (accessed 12.21.23).
- The MathWorks, 2017c. Specify layers of convolutional neural network [WWW Document]. MathWorks. URL <https://www.mathworks.com/help/deeplearning/ug/layers-of-a-convolutional-neural-network.html#ftn.d126e4898> (accessed 12.21.23).
- United States Geological Survey (USGS), 2021. Earthquake hazards program's glossary [WWW Document]. URL <https://www.usgs.gov/glossary/earthquake-hazards-program#l> (accessed 9.26.23).
- Vijayanarayanan, A.R., Goswami, R., Murty, C.V.R., 2017. Estimation of storey stiffness in multi-storey buildings, in: 16th World Conference on Earthquake. National Information Centre of Earthquake Engineering, Santiago de Chile.
- Vijayanarayanan, A.R., Goswami, R., Murty, C.V.R., 2012. Determining levels of seismic shaking effects in buildings for securing non-structural elements, in: Structural Stability and Dynamics : 4th International Conference on Structural Stability and Dynamics, 4-6 January, 2012. pp. 1005–1027. <https://doi.org/10.13140/RG.2.1.3636.3286>
- Wariyatno, N., 2022. Kajian kuantitatif seismic intensity level (SIL) dalam evaluasi bangunan tahan gempa (Disertasi). Universitas Diponegoro, Semarang.
- Wariyatno, N.G., Han, A.L., Gan, B.S., 2019. Proposed Design Philosophy for Seismic-Resistant Buildings. Civil Engineering Dimension 21, 1–5. <https://doi.org/10.9744/ced.21.1.1-5>
- Wariyatno, N.G., Lie, H.A., Hsiao, F.P., Gan, B.S., 2021. Design philosophy for buildings' comfort-level performance. Advances in Technology Innovation 6, 157–168. <https://doi.org/10.46604/aiti.2021.7309>

- Wilson, E.L., 2000. Three dimensional static and dynamic analysis of structures : A physical approach with emphasis on earthquake engineering, 3rd ed. Computers and Structures, Berkeley.
- Wu, H., Masaki, K., Irikura, K., Kurahashi, S., 2016. Empirical fragility curves of buildings in northern Miyagi prefecture during the 2011 off the pacific coast of Tohoku earthquake. *Journal of Disaster Research* 11, 1253–1270. <https://doi.org/10.20965/jdr.2016.p1253>
- Xie, W., Liang, H., Zhang, Z., Wei, P., Lu, Y., 2023. Testing and analysis of surrounding buildings during the operation of seismic simulation shaking table. *Buildings* 13. <https://doi.org/10.3390/buildings13102432>
- Zhang, D., Chen, Y., Zhang, C., Xue, G., Zhang, J., Zhang, M., Wang, L., Li, N., 2023. Prediction of seismic acceleration response of precast segmental self-centering concrete filled steel tube single-span bridges based on machine learning method. *Eng. Struct.* 279. <https://doi.org/10.1016/j.engstruct.2022.115574>
- Zhu, J., Li, S., Wei, Y., Song, J., 2023. On-site instrumental seismic intensity prediction for China via recurrent neural network and transfer learning. *J. Asian Earth Sci.* 248. <https://doi.org/10.1016/j.jseaes.2023.105610>