Curriculum Vitae of Mitsuyoshi Akiyama

1. Personal Information

Born: June 17, 1971 (Married, One child; Japan Citizen)
Language: Japanese and English
E-mail: akiyama617@waseda.jp

2. Education

B. Eng. in Civil Engineering Tohoku University, 1995
M. Eng. in Civil Engineering Tohoku University, 1997
Dr. Eng. in Civil Engineering Tohoku University, 2001

3. Work Experiences

1997 Apr.- Bridge Engineer at Nippon Koei Co., Ltd.
1998 Apr.- Research Associate at Tohoku University
2001 May- Assistant Professor at Tohoku University
2004 Apr.- Associate Professor at Tohoku University
(2008 Oct. to 2009 Sep. Visiting Scholar at Lehigh University, PA, USA)
2011 Apr.-Present Full Professor at Waseda University
(2018 Aug. to 2019 Sep. Visiting Scholar at Lehigh University, PA, USA)
(2020 Feb. to Aug. Visiting Professor at National Taiwan University of Science and Technology, Taiwan)
(2026 Feb. Visiting Professor, Politecnico di Milano, Italy, February 2026)

4. Areas of expertise

- Multi-hazard design, analysis and considerations for bridges.
- Life-cycle risk assessment of a transportation network under multiple hazards
- Investigation of climate change effect on infrastructure's risk and resilience
- Risk-based and resilience-based design methodology of bridge systems
- Innovations in earthquake resistant structures/ Seismic resilient structures
- Application of X-ray technology to bridge maintenance

5. Honors and Awards

- Arthur M. Wellington Prize, ASCE (2026)
- ASCE State of the Art of Civil Engineering Award, ASCE (2026)
- SEI Fellow (F.SEI), Structural Engineering Institute, ASCE. (2026)
- Selected among the World's Top 2% Scientists (Single-Year Impact, 2025), Stanford University and Elsevier (2025)
- IABSE Outstanding Paper Award in the Scientific Paper Category, 2023
- IABMAS (International Association for Bridge Maintenance and Safety) Junior Research Prize, 2016
- The Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology, 2008
- Japan Society of Civil Engineers Yoshida Award in 1998, 2007, and 2010
- Japan Society of Civil Engineers Encouragement Award for Outstanding Thesis in 2007
- Japan Concrete Institute Award for Engineering Development in 2001

6. Plenary and Keynote Lectures

- Akiyama, M.: Lessons from Japan: Toward Life-Cycle and Network-Based Resilience of Existing Bridges under Multi-Hazard Events, III Fabre Conference on Existing bridges, viaducts and tunnels: research, innovation and application, Rome, Italy, 2026. (Invited Lecture)
- Akiyama, M.: Resilience strategies for coastal communities against the anticipated Nankai Trough megaquake and tsunami, 1st International Workshop on Multi-disciplinary

Resilience, Hong Kong, 2025. (Keynote Lecture)
- Akiyama, M.: From Reliability to Resilience: Life-cycle perspectives under multi-hazard and climate change scenarios, International Workshop on Global Reliability of Engineering Structures and Systems (GRESS2025), Wuhan, China, 2025. (Keynote Lecture)
- Akiyama, M., and Frangopol, D.M.: Probabilistic prediction of residual service life of corroded concrete structures. Proceedings of fib-CACRCS2025, Lecco, Italy, 2025.(Keynote Lecture)
- Akiyama, M., and Frangopol, D.M.: Sustainability in prolonging the longevity of structures and infrastructure systems through disaster mitigation, climate change adaptation, and life-cycle management. The Second IALCCE-LCM Workshop 2024, Fortress Island, Netherlands, 2024. (Keynote Lecture)
- Akiyama, M. and Frangopol, D.M. 2024. Life-cycle performance and management of road networks exposed to multiple hazards, ICVRAM-ISUMA 2024, Shanghai, China. (Keynote Lecture)
- Akiyama, M., Frangopol, D. M. 2023. Probabilistic life-cycle performance assessment of corroded concrete structures: Core technologies to predict the remaining service life. Proceeding of the 8th International Symposium on Life-Cycle Civil Engineering (IALCCE 2023), Milan, Italy. (Keynote Lecture)
- Akiyama, M.: Increasing the Resilience of highway bridges under multiple hazards including earthquake, tsunami, corrosion and climate change. Spring 2022 Fazlur R. Khan Distinguished Lecture Series, Bethlehem, USA, 2022 (Invited Lecture)
- Akiyama, M., Frangopol, D.M. and Ishibashi, H.: Reliability, risk and resilience of coastal infrastructure under seismic and tsunami hazards. ASCE/IRD UCLA Lifelines 2021-22 Conference, Los Angeles, USA, 2022. (Invited Lecture)
- Akiyama, M.: What can be done to enhance the resilience of structures and infrastructures in Japan before the anticipated Nankai Trough earthquake occurs? Inaugural Meeting of International Forum of Innovation Base of Earthquake Engineering Comprehensive Simulation &1st International Forum on the Latest Development of Resilient City, Tianjin, China. 2022. (Invited Lecture)
- Akiyama, M. and Frangopol, D.M., 2019. Risk and Resilience of Civil Infrastructure Systems under Extreme Events. Proceedings of IABSE Symposium 2019, Guimaraes, Portugal. (Keynote Lecture)
- Akiyama, M. and Frangopol, D.M., 2018. Life-cycle reliability of bridges under independent and interacting hazards. Proceedings of 9th International Conference on Bridge Maintenance, Safety and Management (IABMAS2018), Melbourne, Australia. (Keynote Lecture)
- Akiyama, M., 2017: Lessons from recent major earthquakes in Japan: Emphasis on reliability assessment of structures under multiple hazards. 18th ASEP International Convention, Quezon, Philippine.
- Akiyama, M. and Frangopol, D.M., 2016. Probabilistic approach for road network retrofitting prioritization under seismic and tsunami hazards. Proceedings of 5th International Symposium on Reliability Engineering and Risk Management (ISRERM2016), Seoul, Korea.
- Akiyama, M. and Frangopol, D.M., 2014. Long term performance of concrete bridges under extreme events. Proceedings of 9th Austroads Bridge Conference, Sydney, New South Wales, Autralia, 2014
- Akiyama, M. and Frangopol, D.M., 2013. Life-cycle reliability of concrete bridges under both extreme events and hazard associated with continuous deterioration, IStructE Conference on Structural Engineering in Hazard Mitigation 2013, Shanghai, China
- Akiyama, M. and Frangopol, D.M., 2013. Life-cycle design of bridges under multiple hazards: Earthquake, tsunami and continuous deterioration, 11th ICOSSAR (International Conference of Structural Safety and Reliability), New York, USA
- Akiyama, M. and Frangopol, D.M., 2012. Lessons from the 2011 Great East Japan Earthquake: Emphasis on life-cycle structural performance, IALCCE (International Symposium on Life-Cycle Civil Engineering), Vienna, Austria

- Akiyama, M. and Frangopol, D.M., 2010. On life-cycle reliability under earthquake excitations of corroded structures. IALCCE (International Symposium on Life-Cycle Civil Engineering) 2010, Taipei, Taiwan

7. Scientific Community Service Activities (at present)

- Managing Editor of Structure and Infrastructure Engineering, Taylor & Francis, UK
- Associate Editor of the ASCE Journal of Bridge Engineering
- Editorial Board Member of Structural Safety
- Editorial Board Member of Probabilistic Engineering Mechanics
- Editorial Board Member of International Journal of Earthquake and Impact Engineering
- Secretary of the Executive Committee of IABMAS (International Association for Bridge Maintenance and Safety)
- Member of the Executive Committee of IALCCE (International Association for Life-cycle Civil Engineering)
- Member of the Executive Board of IASSAR (International Association for Structural Safety and Reliability)
- Chair of Commission 6 –Sustainability–, IABSE (International Association for Bridge and Structual Engineering)
- Members of several technical committee and task groups under IABSE
- Chair of “Reliability and Performance Indicators” in SEI-ASCE Technical Council on Life-Cycle Performance, Safety, Reliability and Risk of Structural Systems
- Co-chair of International Symposium on Life-Cycle Civil Engineering 2027

8. Selected Journal Papers

Theme "Reliability, risk, and resilience of structure and infrastructure/ Multi-hazard issues/ Earthquake and tsunami/Effect of climate change on functionality of civil infrastructure systems"

- Zhong, H., Akiyama, M., Feng, S., Wang, Z. and Dang, X.: Connectivity-based seismic design strategy for bridge networks by controlling fragility correlation among individual bridges, *Reliability Engineering and System Safety*, 270: 112161, 2026.
- Thapa, R., Akiyama, M., Aoki, K., Suzuki, N., Frangopol, D.M. and Koshimura, S.: Tsunami casualty risk assessment integrating evacuation tower placement, seismic road network performance enhancement, and disaster education, *Earthquake Engineering and Structural Dynamics*, 1-21, 2025.
- Akiyama, M.: Life-cycle approaches to sustainable and resilient infrastructure: Innovations in multi-hazard frameworks, *Structure and Infrastructure Engineering*, 21(11-12): 1756-1781, 2025.
- Aoki, K., Akiyama, M., Alhamid, A.K., Frangopol, D.C. and Koshimura, S.: Resilience-based estimation of the disaster waste disposal time considering interdependencies between waste disposal and road network systems under seismic and tsunami hazards in coastal communities, *Reliability Engineering and System Safety*, 262: 111242, 2025.
- He, Z., Akiyama, M., Firdaus, P.S., Huang, Y., Frangopol, D.M. and Aoki, L.: Probabilistic connectivity assessment of road networks exposed to spatially correlated rainfall-triggered landslides, *Reliability Engineering and System Safety*, 257: 110800, 2025.
- He, Z., Akiyama, M., Alhamid, A.K., Frangopol, D.M., and Huang, Y.: Probabilistic life-cycle assessment of landslides exposed to both rainfall under nonstationary climate change effects and earthquakes, *Structural Safety*, 115: 102599, 2025.
- He, Z., Akiyama, M., Alhamid, A.K., Frangopol, D.M., and Huang, Y.: Probabilistic life-cycle landslide assessment subjected to nonstationary rainfall based on alternating stochastic renewal process, *Engineering Geology*, 338: 107543, 2025.
- Alhamid, A.K., Akiyama, M., He, Z., Firdaus, P.S. and Frangopol, D.M.: LRFD methodology for river embankments against non-stationary flooding under climate change, *Structural Safety*, 109: 102477, 2024.

- Aoki, K., Akiyama, M, Alhamid, A.K., Frangopol, D.M. and Koshimura S: Probabilistic connectivity assessment of road networks subjected to ground motion and tsunamis considering the spatial correlations among hazard intensities, *ASCE Journal of Bridge Engineering*, 29(8): 04024057, 2024.
- Feng, D.-C., Ding, J.-Y., Xie, S.-C., Li, Y., Akiyama, M., Lu, Y., Beer, M., and Li, J.: Climate change impacts on the risk assessment of concrete civil infrastructures: a state-of-the-art review, *ASCE Multidisciplinary Journal of Civil Engineering*, 03124001, 2024.
- Alhamid, A.K., Akiyama, M., Koshimura, S., Frangopol, D.M. and Higuma So: Tsunami insurance portfolio optimization for coastal residential buildings under non-stationary sea level rise effects based on sample average approximation, *Stochastic Environmental Research and Risk Assessment*, 38: 817-841, 2024. doi: 10.1007/s00477-023-02602-1
- Alhamid, A.K., Akiyama, M., Aoki, K., Koshimura, S., and Frangopol, D.M.: Life-cycle risk assessment of building portfolios subjected to tsunamis under non-stationary sea-level rise based on a compound renewal process, *Earthquake Engineering and Structural Dynamics*, 52: 1957-2293, 2023.
- Orcesi, A, Connor, A.O., Diamantidis, D, Sykora, M., Wu, T., Akiyama, M., Alhamid, A.K., Schmidt, F., Pregnolato, M., Li, Y., Salarieh, B., Salman, A.M., Bastidas-Arteaga, E., Markogiannaki, O. and Schoefs, F, Investigating the Effects of Climate Change on Structural Actions, *Structural Engineering International*, 32(4): 563-576, 2022.
- Alhamid, A.K., Akiyama, M., Aoki, K., Koshimura, S. and Frangopol, D.M.: Stochastic renewal process model of time-variant tsunami hazard assessment under nonstationary effects of sea-level rise due to climate change, *Structural Safety*, 99: 102263, 2022.
- Alhamid, A.K., Akiyama, M., Ishibashi, H., Aoki, K., Koshimura, S. and Frangopol, D.M.: Framework for probabilistic tsunami hazard assessment considering the effects of sealevel rise due to climate change, *Structural Safety*, 94: 102152, 2022.
- Ishibashi, H., Akiyama, M., Kojima, T., Aoki, K., Koshimura, S. and Frangopol, D.M.: Risk estimation of the disaster waste generated by both ground motion and tsunami due to the anticipated Nankai Trough earthquake, *Earthquake Engineering and Structural Dynamics*, 50: 2134-2155, 2021.
- Ishibashi, H., Akiyama, M., Frangopol, D.M., Koshimura, S., Kojima, T. and Nanami, K.: Framework for estimating the risk and resilience of road networks with bridges and embankments under both seismic and tsunami hazards, *Structure and Infrastructure Engineering*, 17(4): 494-514, 2020.
- Akiyama, M., Frangopol, D.M., and Ishibashi, H.: Toward life-cycle reliability-, risk- and resilience-based design and assessment of bridges and bridge networks under independent and interacting hazards: emphasis on earthquake, tsunami and corrosion, *Structure and Infrastructure Engineering*, 16(1): 26-50, 2020.
- Ghosn, M., Duenas-Osorio, L., Frangopol, D. M., McAllister, T. P., Bocchini. P., Manuel, L., Ellingwood, B, Arangio, S., Bontempi, F., Shah, M., Akiyama, M., Biondini, F., Hernandez, S., and Tsiatas, G.: Performance indicators for structural systems and infrastructure networks, *ASCE Journal of Structural Engineering*, 142(2): F4016003, 2016.
- Akiyama, M., Frangopol, D.M., Arai, M. and Koshimura, S.: Reliability of bridges under tsunami hazards: Emphasis on the 2011 Tohoku-Oki Earthquake, *Earthquake Spectra*, 29(S1): S295-S314, 2013.

Theme "Development of damage-free structures/ Development of resilient structures/ Novel earthquake-resistant structures/ Application of 3D printers/ Seismic issues"

- Aoki, K., Akiyama, M., Hanaki, F., Yamashita, T., and Uno, Y.: Precast RC blocks with detachable connections for emergency temporary bridges: Wave-shaped concrete shear keys fabricated from 3D-printed molds and steel couplers, *Journal of Bridge Engineering*, 31(6): 04026026, 2026.
- Feng, S., Akiyama, M., Hikita, S., Kobayashi, S., Takahashi, H., and Arima, S.: Cyclic loading tests and seismic fragility analysis of rocking arch-shaped segmental pier with

annular double sliding system, *Journal of Earthquake Engineering*, 29(11): 2400-2428, 2025.

- Feng, S., Akiyama, M., Usui, S., Hikita, S., Takahashi, H., and Arima, S.: Cyclic loading tests and seismic performance evaluation of arch-shaped concrete masonry segmental pier with annular double sliding system, *Journal of Earthquake Engineering*, 29(2): 465-496, 2025.
- Firdaus, P.S., Akiyama, M., Kashiyama, H., Brito, M.B., Takahashi, H., Ishigaki, N., and Honda, R.: Shaking table test to investigate the size effect on the seismic response of a low-cost friction pendulum system, *Structure and Infrastructure Engineering*, 21(5): 877-892, 2025.
- Ishibashi, H., Akiyama, M., Fujiwara, M., Uno, Y., and Hiromitsu, T.: Precast RC blocks with connections composed of steel shear keys and CFRP sheets for the superstructure of temporary bridges in the postdisaster situation, *ASCE Journal of Bridge Engineering*, 27(8): 04022061, 2022.
- Brito, M.B., Akiyama, M., Seto, T., Honda, R., and Ishigaki, N.: Shaking table test of a friction sliding system on a concrete member with variable curvature fabricated by a three-dimensional printer, *Journal of Earthquake Engineering*, 26(16): 8332-8358, 2022.
- Brito, M.B., Akiyama, M., Ichikawa, Y., Yamaguchi, H., Honda, R., and Ishigaki, N.: Bidirectional shaking table tests of a low-cost friction sliding system with flat-inclined surfaces. *Earthquake Engineering and Structural Dynamics*, 49: 817-837, 2020.
- Hasan, M.A., Akiyama, M., Kashiwagi, K., Kojima, K. and Peng, L.: Flexural behaviour of reinforced concrete beams repaired using a hybrid scheme with stainless steel rebars and CFRP sheets, *Construction and Building Materials*, 265: 120296, 2020.
- Brito, M.B, Ishibashi, H., and Akiyama, M.: Shaking table tests of a reinforced concrete bridge pier with a low-cost sliding pendulum system, *Earthquake Engineering and Structural Dynamics*, 48: 366-386, 2019.
- Akiyama, M., Frangopol, D.M. and Mizuno, K.: Performance analysis of Tohoku-Shinkansen viaducts affected by the 2011 Great East Japan earthquake, *Structure and Infrastructure Engineering*, 10(9): 1228-1247, 2014.
- Akiyama, M., Abe, S., Aoki, N. and Suzuki, M.: Flexural test of precast high-strength reinforced concrete pile prestressed with unbonded bars arranged at the center of the cross-section, *Engineering Structures*, 34: 259-270, 2012.
- Akiyama, M., Matsuzaki, M., Dang, D.H. and Suzuki, M.: Reliability-based capacity design for reinforced concrete bridge structures, *Structure and Infrastructure Engineering*, 8(12):1096-1107, 2012.
- Akiyama, M., Suzuki, M. and Frangopol, D.M.: Stress-Averaged Strain Model for Confined High-Strength Concrete, *ACI Structural Journal*, 107(2): 179-188, 2010.

Theme "Life-cycle performance assessment of deteriorating concrete structures using experimental evidence, probabilistic analysis and finite element method"

- Wu, T., Akiyama, M., Feng, D-C, Lim, S., Frangopol, D.M., Xu, Z.: Modeling the spatial corrosion of strand and FE-based Monte Carlo simulation for structural performance assessment of deteriorated PC beams, *Structural Safety*, 156: 102605, 2025.
- Akiyama, M., Frangopol, D.M., and Xu, Z.: Probabilistic service life assessment of corroded concrete structures: a state-of-the-art review, *Structure and Infrastructure Engineering*, 21(7-8): 1081-1100, 2025.
- Xu, Z., Akiyama, M., Lim, S., Srivaranun, S., Frangopol, D.M., Miyazato, S., and Li, A.: Investigation of corrosion-induced cracks using corrosion products quantified by an X-ray technique and FE analysis of single- and multiple-rebar beams, *Cement and Concrete Composites*, 151: 105565, 2024.
- Wu, T., Akiyam, M.,Lim, S., Wu, L., Xu, Z., Srivaranun, S., Frangopol, D.M.,and Chen, W.: Effects of spatial corrosion distribution and prestressing levels on the structural performance of deteriorated PC beams, *Construction and Building Materials*, 421: 135650, 2024.
- Xin, J., Akiyama, M., Miyazato, S., Frangopol, D.M., Lim, S., Xu, Z., and Li, A.: Effects of

galvanostatic and artificial chloride environment methods on the steel corrosion spatial variability and probabilistic flexural capacity of RC beams, *Structure and Infrastructure Engineering*, 18(10-11): 1506-1525, 2022.

- Srivaranun, S., Akiyama, M., Bocchini, P., Christou, V., Frangopol, D.M., Fukushima, H. and Masuda, K.: Effect of the interaction of corrosion pits among multiple tensile rebars on the reliability of RC structures: Experimental and numerical investigation, *Structural Safety*, 93: 102115, 2021.
- Zhang, M., Nishiya, N., Akiyama, M., Lim, S. and Masuda, K.: Effect of the correlation of steel corrosion in the transverse direction between tensile rebars on the structural performance of RC beams, *Construction and Building Materials*, 264: 120678, 2020.
- Hasan, M.A., Yan, K., Lim, S., Akiyama, M. and Frangopol, D.M.: LCC-based identification of geographical locations suitable for using stainless steel rebars in reinforced concrete girder bridges, *Structure and Infrastructure Engineering*, 16(9): 1201-1227, 2020.
- Zhang, M., Song, H., Lim, S., Akiyama, M., and Frangopol, D.M.: Reliability estimation of corroded RC structures based on spatial variability using experimental evidence, probabilistic analysis and finite element method, *Engineering Structures*, 192: 30-52, 2019.
- He, Z.S., Akiyama, M., He, C., Frangopol, D.M., and Liu, S.J.: Life-cycle reliability analysis of shield tunnels in coastal regions: emphasis on flexural performance of deteriorating segmental linings, *Structure and Infrastructure Engineering*, 15(2): 851-871, 2019.
- Yanweerasak, T., Pansuk, W., Akiyama, M. and Frangopol, D.M.: Life-cycle reliability assessment of reinforced concrete bridges under multiple hazards, *Structure and Infrastructure Engineering*, 14(7): 1011-1024, 2018.
- Lim, S., Akiyama, M., Frangopol, D.M. and Jiang, H.: Experimental investigation of the spatial variability of the steel weight loss and corrosion cracking of RC members: Novel X-ray and digital image processing techniques, *Structure and Infrastructure Engineering*, 13(1): 118-134, 2017.
- Lim, S., Akiyama, M. and Frangopol, D.M.: Assessment of the structural performance of corrosion-affected RC members based on experimental study and probabilistic modeling, *Engineering Structures*, 127: 189-205, 2016.
- Akiyama, M. and Frangopol, D.M.: Long-term seismic performance of RC structures in an aggressive environment: emphasis on bridge piers, *Structure and Infrastructure Engineering*, 10(7): 865-879, 2014.
- Akiyama, M., Frangopol, DM. and Matsuzaki, H.:Life-cycle reliability of RC bridge piers under seismic and airborne chloride hazards, *Earthquake Engineering and Structural Dynamics*, 40(15), 1671-1687, 2011.

Theme "For advancement of infrastructure's maintenance through integration of machine learning, numerical simulation, reliability analysis, and updating theory"

- Jia, S., Akiyama, M., and Frangopol, D.M.: A transfer learning approach to predict corrosion-induced concrete cracking based on steel weight loss distributions, *Structural Safety*, 120: 102684, 2026.
- Jia, S., Akiyama, M., and Frangopol, D.M.: Fusing experimental and FEM-based knowledge: a transfer learning model for inferring steel corrosion in reinforced concrete structures, *Structural Safety*, 120: 102672, 2026.
- Jia, S., Akiyama, M., Frangopol, D.M., and Xu, Z.: Failure probability estimate of corroded reinforced concrete structures based on sparse representation of steel weight loss distributions, *Structural Safety*, 117: 102622, 2025.
- Yamada, T., Akiyama, M., Xu, Z., Bocchini, P., Frangopol, D.M., Nakamura, S., and Adachi, T.: Effect of image quality associated with corrosion-induced cracks on machine learning-based load-bearing capacity assessment of RC beams, *Structure and Infrastructure Engineering*, 21(6): 1024-1046, 2025.
- Jia, S., Akiyama, M., Frangopol, D.M., Xu, Z.: Bayesian inference of the spatial distribution of steel corrosion in reinforced concrete structures using corrosion-induced crack width, *Structural Safety*, 111: 102518, 2024.

- Xin, J., Akiyama, M., and Frangopol, D.M.: Autonomous detection of steel corrosion spatial variability in reinforced concrete using X-ray technology and deep learning-based semantic segmentation, *Automation in Construction*, 158: 105252, 2023.
- Xin, J., Akiyama, M., and Frangopol, D.M.: Sustainability-informed management optimization of asphalt pavement considering risk evaluated by multiple performance indicators using deep neural networks, *Reliability Engineering and System Safety*, Vol. 238, 109448, 2023.
- Srivaranun, S., Akiyama, M., Yamada, T., Frangopol, D.M., and Xin, J.: A novel combined experimental-machine learning approach to estimate the probabilistic capacity of RC beams with spatially correlated rebar corrosion in transverse and longitudinal directions, *Engineering Structures*, 279: 115588, 2023.
- Jia, S., Akiyama, M., Han, B., Xie, H., and Frangopol, D.M.: Structural identification via the inference of the stochastic volatility model conditioned on the time-dependent bridge deflection, *Structural Safety*, 100: 102279, 2023.
- Xin, J., Akiyama, M., Frangopol, D.M., and Zhang, M.: Multi-objective optimisation of in-service asphalt pavement maintenance schedule considering system reliability estimated via LSTM neural networks, *Structure and Infrastructure Engineering*, 18(7): 1002-1019, 2022.
- Srivaranun, S., Akiyama, M., Masuda, K., Frangopol, D.M., and Maruyama, O.: Random field-based reliability updating framework for existing RC structures incorporating the effect of spatial steel corrosion distribution, *Structure and Infrastructure Engineering*, 18(7): 967-982, 2022.
- Zhang, M., Akiyama, M., Shintani, M., Xin, J. and Frangopol, D.M.: Probabilistic estimation of flexural loading capacity of existing RC structures based on observational corrosion-induced crack width distribution using machine learning, *Structural Safety*, 91: 102098, 2021.
- Xin, M., Akiyama, M., Frangopol, D.M., Zhang, M., Pei, J., Zhang, J.: Reliability-based life-cycle cost design of asphalt pavement using artificial neural networks, *Structure and Infrastructure Engineering*, 17(6): 872-886, 2021.
- He, Z.S, Srivaranun, S.,Akiyama, M. and Frangopol, D.M.: Life-cycle reliability-based design and reliability updating of reinforced concrete shield tunnels in coastal regions, *Structure and Infrastructure Engineering*, 16(4): 726-737, 2020.
- Akiyama, M., Frangopol, D.M. and Takenaka, K.: Reliability-based durability design and service life assessment of reinforced concrete deck slab of jetty structures, *Structure and Infrastructure Engineering*, 13(4), 468-477, 2017.
- Yanweerasak, T., Akiyama, M. and Frangopol, D.M.: Updating the seismic reliability of existing RC structures in a marine environment by incorporating the spatial steel corrosion distribution: application to bridge piers, *ASCE Journal of Bridge Engineering*, 21(7): 04016031, 2016.
- Akiyama, M., Frangopol, D.M., and Yoshida, I.: Time-dependent reliability analysis of existing RC structures in a marine environment using hazard associated with airborne chlorides, *Engineering Structures*, 32(11): 3768-3779, 2010.

Theme "Structural performance assessment of steel fiber-reinforced concrete members/ Development of casting method for SFRC members"

- Chen, C., Akiyama, M., Lim, S., Kondo, S., Hosono, Y., Lai, Y., and Aoki, K.: Shear performance of centrifugal forming hollow circular SFRC piles: Feasibility study of replacing stirrups with steel fibers, *Construction and Building Materials*, 409: 134140, 2023.
- Li, Y., Ruan, X., Akiyama, M., Zhang, M., Xin, J., Lim, S.: Modelling method of fibre distribution in steel fibre reinforced concrete based on X-ray image recognition, *Composites Part B: Engineering*, 223: 109124, 2021.
- Raju, R.A., Akiyama, M., Lim, S., Kakegawa, T., Hosono, Y.: A novel casting procedure for SFRC piles without shear reinforcement using the centrifugal forming technique to manipulate the fiber orientation and distribution, *Construction and Building Materials*, 303:

124232, 2021.
- Raju, R.A, Lim, S., Akiyama, M., and Kageyama, T.: Effects of concrete flow on the distribution and orientation of fibers and flexural behavior of steel fiber-reinforced self-compacting concrete beams, *Construction and Building Materials*, 262: 119963, 2020.
- Lim, S., Raju, R.A., Matsuda, M., Okamoto, T. and Akiyama, M.: Structural behavior prediction of SFRC beams by a novel integrated approach of X-ray imaging and finite element method, *Construction and Building Materials*, 170: 347-365, 2018.

9. Book Chapters
- D. M. Frangopol, M. Liu, M. Akiyama, D.Y. Yang, K. G. Papakonstantinou, K. Hass, M. Stewart, F. Biondini, M. Ghosn, S. Bianchi, G. Fiorillo, A.S. Kiremidjian, J. Y. Lee, A. Shafieezadeh, and P. G. Morato. Life-cycle risk-based decision making in a changing climate. Chapter 4 in Effects of Climate Change on Life-cycle Performance, Safety, Reliability and Risk of Structures and Infrastructure Systems (Edited by F. Biondini, Z. Lounis, and M. Ghosn), ASCE, Reston, Virginia, 2024, pp. 207-292.
- B. R. Ellingwood, P. Bocchini, Z. Lounis, M. Ghosn, M. Liu, D. Yang, L. Capacci, S. Diniz, J. van de Lindt, D. M. Frangopol, M. Akiyama, Y. Li, M. Barbato, H. Hong, T. McAllister, G. Tsampras, and F. Vahedifard. Impact of climate change on infrastructure performance. Chapter 3 in Effects of Climate Change on Life-cycle Performance, Safety, Reliability and Risk of Structures and Infrastructure Systems (Edited by F. Biondini, Z. Lounis, and M. Ghosn), ASCE, Reston, Virginia, 2024, pp. 115-206.
- Akiyama, M., Soliman, M., Biondini, F. and Frangopol, D.M. Structural Deterioration Mechanisms. Chapter 1 in Life-Cycle Assessment, Design, and Maintenance of Structures and Infrastructure System (Edited by Biondini, F. and Frangopol D.M.), American Society of Civil Engineers, 2019. pp. 1-31.doi: 10.1061/9780784415467.ch01
- Akiyama, M., Frangopol, D.M. and Matsuzaki, H. Reliability-based durability design and service life assessment of concrete structures in an aggressive environment. Chapter 1 in Maintenance and Safety of Aging Infrastructure (Edited by D.M. Frangopol and Y. Tsompanakis), CRC Press/Balkema, Taylor & Francis Group, London, 2014, pp. 1-26.
- Frangopol, D.M. and Akiyama, M. Lifetime seismic reliability analysis of corroded reinforced concrete bridge piers. Chapter 23 in Computational Methods in Earthquake Engineering (Edited by M. Papadrakakis, M Fragiadakis, and N. D. Lagaros), Springer, Dordrecht-Heidelberg-London-New York, 2011, pp. 527-537.

As of April 1, 2026

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