CURRICULUM VITAE

Ahmad Razin bin Zainal Abidin

Associate Professor Ts. Dr. · Computational Structural Mechanics



Department Structure and Materials, Faculty of Civil Engineering
Organisation Universiti Teknologi Malaysia, 81310 Johor Bahru, Johor, Malaysia
E-mail arazin@utm.my
Office +607 553 1588 · Room M50-02-29
Web people.utm.my/arazin · pure.utm.my/researcher/arazin

ORCID 0000-0002-3264-1908 **Scopus** 56997005500 **WoS** D-8333-2019
Scholar vd3Vx5UAAAAJ

PROFILE

Associate Professor in Computational Structural Mechanics at Universiti Teknologi Malaysia, with a PhD from Imperial College London (2013). Research centres on meshfree and isogeometric methods — Moving Least Squares, Element-Free Galerkin, RPIM and their coupling with NURBS geometry for CAD–CAE integration — together with AI- and data-driven tools for structural assessment and nonlinear analysis of offshore and steel structures. Co-founder of the Malaysian Society for Numerical Methods (2017) and its President 2019–2022; leader of the i-ProMIS research group and Technovation Park Manager at UTM's Innovation & Commercialisation Centre.

Areas of expertise

- Computational structural mechanics & AI-driven simulations
- Advanced numerical & mathematical modelling in civil engineering
- AI & data-driven applications in civil engineering
- Fluid–structure interaction & sustainable engineering systems

Research metrics

48 Journal articles · 15 in Q1

18 h-index (Scopus)

13 Research grants · 6 as PI

13 PhD supervised · 7 graduated

ACADEMIC QUALIFICATIONS

2008 – 2013 **Doctor of Philosophy (PhD) — Finite Element Method Research**
Imperial College London, United Kingdom · Supervisor: Prof. Bassam A. Izzuddin · Thesis: Modelling of Local Elastic Buckling for Steel Beams with Web Openings

2006 – 2008 **Master's Degree — Construction Management**
Universiti Teknologi Malaysia · Dissertation: Simulation of Industrialised Building System (IBS) Formation for Housing Construction

2000 – 2005 **Bachelor's Degree — Civil Engineering (Construction Management)**
Universiti Teknologi Malaysia · Project: Contractor Selection using Analytical Hierarchy Process (AHP)

ACADEMIC POSITIONS

2023 – present **Associate Professor**
Department of Structure and Materials, Faculty of Civil Engineering, UTM

2013 – 2023 **Senior Lecturer**
Department of Structure and Materials, Faculty of Civil Engineering, UTM

2007 – 2013 **Lecturer**
Department of Structure and Materials, Faculty of Civil Engineering, UTM

2005 – 2007 **Tutor**
IT Unit, Faculty of Civil Engineering, UTM

PROFESSIONAL MEMBERSHIP & RECOGNITION

PERIOD	ORGANISATION	ROLE
2005 – present	Board of Engineers Malaysia (BEM)	Member
2018 – present	Malaysia Board of Technologists (MBOT)	Professional Technologist (Ts.)
2019 – 2022	Malaysian Society for Numerical Methods (MSNM)	President
2017 – present	Malaysian Society for Numerical Methods (MSNM)	Co-founder & Member
2017 – present	UTM Centre for Industrial and Applied Mathematics (UTM-CIAM)	Associate Fellow

ADMINISTRATIVE EXPERIENCE

Jul 2025 – present **Leader, Intelligent Project Management and Industrialised Systems (i-ProMIS) Research Group**
Faculty of Civil Engineering, UTM

Sep 2020 – present **Technovation Park Manager**
Innovation and Commercialisation Centre (ICC), UTM

Sep 2020 – present **Chairman, Committee of Occupational Safety, Health & Environment (OSHE)**
Innovation and Commercialisation Centre (ICC), UTM

Nov 2018 – Jul 2025 **Leader, Industrialised System Research Group**
Faculty of Civil Engineering, UTM

Jun 2016 – Aug 2020 **Chief Incident Commander**
School of Civil Engineering, UTM

2016 – 2018 **Facility Manager · Laboratory Manager · IT Manager**
Faculty of Civil Engineering, UTM

Jan 2014 – Jan 2016 **Head of Computer Laboratory**
Faculty of Civil Engineering, UTM

RESEARCH GRANTS

PERIOD	PROJECT	FUNDER	ROLE
2025 – 2028	Effective CAD Engineering Modeling and CAE Integration Using a Novel NURBS-Divergence Method for 2D Planar Analysis of Complex Geometries	FRGS	PI
2023 – 2025	Advancing Engineering Design and Analysis through NURBS Geometrical Representation and Higher-order Interpolation in CAD-CAE	UTM Encouragement Research	PI
2020 – 2022	Enhanced Autonomous Crack Damage Detection at Various Distances Using Convolutional Neural Networks	UTM Fundamental Research	PI
2019 – 2021	CRG 51.4: Data Analysis and Optimization for River Bifurcation	UTM Collaborative Research Grant	PI
2018 – 2020	A Novel Locking-Free Meshfree Formulation to Predict the Nonlinear Structural Behavior of Flexible Marine Riser for Oil and Gas Platform	UTM Tier 1	PI

2017 – 2018	Photogrammetry and Image Processing Technique with Meshfree Formulation to Measure Strain-Displacements of Structural Behaviour	UTM Tier 2	PI
2020 – 2023	Damage Identification through Integrated Nonlinear Auto-regressive Neural Network and Wavelet Packet Energy	FRGS	Member
2019 – 2022	A Three-Dimensional Modelling of Subsea Cable with Buoyancy Module using Gradient-Based Geometry Minimization Approach	FRGS	Member
2019 – 2022	CRG 20.0: Real-Time Tunnel Lining Structural Health Monitoring (SHM) System	UTM Collaborative Research Grant	Member
2017 – 2019	River Induced Energy from Vertical Axis Bioinspired Tidal Turbine (VATT)	UTM Tier 1	Member
2017 – 2019	Improvement of Attendance System by Incorporating Mathematical Logic	UTM Tier 1	Member
2016 – 2019	Derivation Model of Dynamic Displacement Measurement Between GPS and an Accelerometer for Bridge Monitoring	FRGS	Member
2014 – 2015	Effect of Clogging on the Properties of Porous Asphalt	UTM Encouragement Grant	Member

POSTGRADUATE SUPERVISION

PhD — main supervisor

- Zhang Mengqiu — RPIM–isogeometric coupling for crack growth simulation **ongoing**
- Nur Adlin Lina Normisyidi — 3D modelling of subsea cable with buoyancy module **ongoing**
- Suriyadi Sojipto — Steel plates protected with gypsum boards under explosion **ongoing**
- Mokhtazul Haizad Mokhtaram — Coupled NURBS and meshfree RPIM for 2D planar analysis (graduated)
- Mohd Al Akhbar Mohd Noor — Coupling of non-uniform radial basis and FEM for cellular beams (graduated)
- Siti Hasyyati Drahman — Semi-empirical numerical modelling of particle-reinforced bio-composites (graduated)
- Akram Mohamed Mhaya — Durability and sound absorption of concrete with waste tyre aggregate (graduated)

PhD — co-supervisor

- Norhidayah Rasin — Establishment of the NURBS-Divergence Method **ongoing**
- Muhammad Yousaf Raza Taseer — CO_2 capture via accelerated mineralisation of slag wastes **ongoing**
- Moy Jian Jun — Structural evaluation of scissor frame structures **ongoing**
- Yip Bao Fang — Transport of healing agent in self-healing concrete (graduated)
- Hasanain Radhi Radeef Al Dulaimi — Cracking resistance of modified hot mix asphalt (graduated)
- Hassan Amer Ali Al-Gaifi — Crack self-healing concrete by microbial calcium carbonate (graduated)

Master's

1 by research (graduated), 8 by taught course (7 graduated, 1 ongoing), 1 mixed-mode as co-supervisor. 16 undergraduate final-year projects supervised.

TEACHING

246 credit hours taught at undergraduate level and 21 at postgraduate level since 2007. Current and recent subjects:

CODE	SUBJECT	LEVEL
SEAA4243 / SKAB4243	Finite Element Method (Kaedah Unsur Terhingga)	Undergraduate
MKAE1143	Finite Element Method	Postgraduate

SEAA3313 / SKAB3313	Reinforced Concrete Design 1	Undergraduate
SEAA4333	Reinforced Concrete Design 2	Undergraduate
SKAB2413 / SKAA3413	Computer Programming (Aturancangan Komputer)	Undergraduate
SEAA2012 / SKAA2012	Civil Engineering Laboratory 1	Undergraduate

AWARDS & HONOURS

YEAR	AWARD	LEVEL
2022	Appreciation as President of MSNM	National
2022	Anugerah Penulis Jurnal Berindeks, Citra Karisma UTM	UTM
2022	Trailblazer Award	UTM
2021	STEM Researcher Award	UTM
2021	Award of Excellence, Active Blended Learning	UTM
2020	Quadruple Helix Award	UTM
2020	Award of Excellence, Active Blended Learning (Level 5)	UTM
2019	Award of Excellence, Active Blended Learning	UTM
2019	Sijil Kecemerlangan Perkhidmatan, Faculty of Engineering	Faculty
2018	Anugerah Kesihatan & Keselamatan Pekerjaan (AKKP 2017), Citra Karisma UTM	UTM
2017	Anugerah Perkhidmatan Cemerlang (APC), Citra Karisma UTM	UTM
2017	Active Blended Learning, SKAA4243	UTM
2017	Penghargaan Penyumbang Utama, Anugerah Webometrik	Faculty
2016	International Innovative Practices in Higher Education EXPO (I-PHEX 2016)	International
2016	Anugerah Blended Learning	UTM
2015	Penghargaan Khas Fakulti, OBE-Based Student Information Tools · Anugerah Pengajaran	Faculty
2013 – 2014	Anugerah Khas Fakulti · Anugerah Kualiti Akademik	Faculty

INTELLECTUAL PROPERTY

Patent (granted): Self-Healing Bio-Concrete and Method to Produce Thereof — MyIPO MY-191772-A, granted 14 Jul 2022 (co-inventor).

Copyrights (12 registered, 2016–2022): Excel-Based Program for Finite Element Model Generator v1.0; MATLAB source codes for 1D unsteady advection–diffusion and diffusion equations (explicit and implicit finite difference, 3 titles); Mathematical Solution for Subsea Cable Laying Problem (MISG 2015); Enhanced Dry Process Method for Waste Plastic Modified Asphalt Mixture; Arms Stand for Stingless Beehive; ICCubeX Incubation Program; SKAB Curriculum for Bachelor's Degree of Civil Engineering UTM; Program Codes for Students Summative Assessment Report for POs (main inventor); Students Report Card Considering iCGPA; Students Summative Assessment Report for POs.

BOOKS

- Yassin, A. Y. M., **Abidin, A. R. Z.**, Kasiman, E. H., Noor, M. A. M., & Nazir, M. Z. J. A. (2020). *2D Finite Element Formulations for Heat, Solid and Fluid (with MATLAB)*. Malaysian Society for Numerical Methods.

- Yassin, A. Y. M., **Abidin, A. R. Z.**, Kasiman, E. H., Noor, M. A. M., & Nazir, M. Z. J. A. (2018). *Finite Element Formulations for Statics and Dynamics of Plane Structures (with MATLAB)*. Malaysian Society for Numerical Methods.
- Abdul Rashid, A. R., & **Abidin, A. R. Z.** (2016). Rotational spring analogy and finite element method for plane frame analysis. In *Advanced Analyses and Experiments on Structural Problems*. Penerbit UTM. (book chapter)

SELECTED JOURNAL ARTICLES (2013 – 2026)

Full list of 48 articles: people.utm.my/arazin/journal-articles · Google Scholar · Scopus.

1. Sojipto, S., Topa, A., Misnon, N. A., Saari, S., Husen, H., Jelani, J., & **Abidin, A. R. Z.** (2026). Numerical simulations of steel plates protected with gypsum boards subjected to explosions. *IOP Conference Series: Earth and Environmental Science*, 1605(1), 012024. doi:10.1088/1755-1315/1605/1/012024
2. Rasin, N., Hirol, H., **Abidin, A. R. Z.**, Mokhtaram, M. H., Noor, M. A. M., & Yassin, A. Y. M. (2025). NURBS-Divergence-Meshless (NDM) method. *Computers & Mathematics with Applications*, 196, 151–171. doi:10.1016/j.camwa.2025.07.011 Q1
3. Zhang, M., **Abidin, A. R. Z.**, & Tan, C. S. (2025). An extended coupling method integrating NURBS and meshfree RPIM for accurate 2D crack modeling. *Theoretical and Applied Fracture Mechanics*, 139, 105007. doi:10.1016/j.tafmec.2025.105007 Q1
4. Yip, B. F., Kasiman, E. H., **Abidin, A. R. Z.**, Tan, C. S., & Sulaiman, A. (2025). Improving capillary flow predictions in self-healing concrete: a dynamic contact angle approach using the volume of fluid model. *Journal of Building Pathology and Rehabilitation*, 10(2), 154. doi:10.1007/s41024-025-00663-z
5. Yip, B. F., Tan, C. S., **Abidin, A. R. Z.**, Kasiman, E. H., & Haniffah, M. R. M. (2025). Numerical simulation of fire resistance performance of insulated metal panels: a review. *IOP Conference Series: Earth and Environmental Science*, 1577(1), 012004.
6. Raza Taseer, M. Y., **Abidin, A. R. Z.**, & Ishak, S. (2025). Predicting the compressive strength of limestone calcined clay cement (LC3) mortars with POFA via maturity method. *Mehran University Research Journal of Engineering and Technology*, 44(3), 120–131. doi:10.22581/muet1982.0307
7. Singh, A., Hirol, H., **Abidin, A. R. Z.**, Noor, M. A. M., Mokhtaram, M. H., & Yassin, A. Y. M. (2024). Element Free Galerkin (EFG) formulation in solving kinematic wave equation for hydrological modelling. *Journal of Advanced Research in Applied Sciences and Engineering Technology*, 37(2), 1–13. doi:10.37934/araset.37.2.113
8. Zhang, M., **Abidin, A. R. Z.**, & Tan, C. S. (2024). State-of-the-art review on meshless methods in the application of crack problems. *Theoretical and Applied Fracture Mechanics*, 131, 104348. doi:10.1016/j.tafmec.2024.104348 Q1
9. Drahman, S. H., Kueh, A. B. H., & **Abidin, A. R. Z.** (2024). Simplified surface wettability determination defined by new interfacial interaction compatibility expressions for composites. *Journal of Adhesion Science and Technology*, 38(4), 533–549. doi:10.1080/01694243.2023.2240588
10. Su Fen, N., Shokravi, H., Bakhary, N., Padil, K. H., & **Abidin, A. R. Z.** (2023). Distance insensitive concrete crack detection with controlled blurriness using a convolutional neural network. *Civil Engineering Infrastructures Journal*, 56(1), 117–136. doi:10.22059/CEIJ.2022.334291.1802
11. Radeef, H. R., Hassan, N. A., Mahmud, M. Z. H., Al Saffar, Z. H., Abass, H. F., & **Abidin, A. R. Z.** (2023). Fracture resistance of polymeric wastes modified asphalt using R-curve and digital image correlation. *Theoretical and Applied Fracture Mechanics*, 123, 103691. doi:10.1016/j.tafmec.2022.103691 Q1
12. Normisyidi, N. A. L., **Abidin, A. R. Z.**, & Hoe, Y. S. (2022). Numerical simulation of a three-dimensional subsea cable with buoyancy module. *Malaysian Journal of Fundamental and Applied Sciences*, 18(5), 570–583. doi:10.11113/mjfas.v18n5.2588
13. Moy, J. J., Tan, C. S., Mohammad, S., & **Abidin, A. R. Z.** (2022). State-of-art review on deployable scissor structure in construction. *Structures*, 42, 160–180. doi:10.1016/j.istruc.2022.05.084
14. Mokhtaram, M. H., Noor, M. A. M., Nazir, M. Z. J. A., **Abidin, A. R. Z.**, & Yassin, A. Y. M. (2022). Coupling of NURBS and meshfree RPIM for plane stress of web with openings. *Engineering Analysis with Boundary Elements*, 138, 266–279. doi:10.1016/j.enganabound.2022.02.018
15. Drahman, S. H., **Abidin, A. R. Z.**, & Kueh, A. B. H. (2022). Two-dimensional meshfree-based digital image correlation for strain-displacement measurement. *Experimental Techniques*, 46(2), 273–286. doi:10.1007/s40799-021-00476-y
16. Radeef, H. R., Hassan, N. A., Mahmud, M. Z. H., **Abidin, A. R. Z.**, Jaya, R. P., Ismail, C. R., et al. (2022). Linear viscoelastic response of semi-circular asphalt sample based on digital image correlation and XFEM. *Measurement*, 192, 110866. Q1

17. Radeef, H. R., Hassan, N. A., Mahmud, M. Z. H., **Abidin, A. R. Z.**, Ismail, C. R., Abbas, H. F., et al. (2021). Characterisation of cracking resistance in modified hot mix asphalt under repeated loading using digital image analysis. *Theoretical and Applied Fracture Mechanics*, 116, 103130. Q1
18. Balasbaneh, A. T., Yeoh, D., & **Abidin, A. R. Z.** (2020). Life cycle sustainability assessment of window renovations in schools against noise pollution in tropical climates. *Journal of Building Engineering*, 32, 101784. doi:10.1016/j.jobe.2020.101784 Q1
19. Mhaya, A. M., Huseien, G. F., **Abidin, A. R. Z.**, & Ismail, M. (2020). Long-term mechanical and durable properties of waste tires rubber crumbs replaced GBFS modified concretes. *Construction and Building Materials*, 256, 119505. doi:10.1016/j.conbuildmat.2020.119505 Q1
20. Algaifi, H. A., Bakar, S. A., Sam, A. R. M., Ismail, M., **Abidin, A. R. Z.**, Shahir, S., et al. (2020). Insight into the role of microbial calcium carbonate and the factors involved in self-healing concrete. *Construction and Building Materials*, 254, 119258. doi:10.1016/j.conbuildmat.2020.119258 Q1
21. Algaifi, H. A., Bakar, S. A., Sam, A. R. M., **Abidin, A. R. Z.**, Shahir, S., & AL-Towayti, W. A. H. (2018). Numerical modelling for crack self-healing concrete by microbial calcium carbonate. *Construction and Building Materials*, 189, 816–824. doi:10.1016/j.conbuildmat.2018.08.218 Q1
22. Umar, S., Bakhary, N., & **Abidin, A. R. Z.** (2018). Response surface methodology for damage detection using frequency and mode shape. *Measurement*, 115, 258–268. doi:10.1016/j.measurement.2017.10.047 Q1
23. **Abidin, A. R. Z.**, Izzuddin, B. A., & Lancaster, F. (2017). A meshfree unit-cell method for effective planar analysis of cellular beams. *Computers & Structures*, 182, 368–391. doi:10.1016/j.compstruc.2016.09.002 Q1
24. **Abidin, A. R. Z.**, & Izzuddin, B. A. (2013). Meshless local buckling analysis of steel beams with irregular web openings. *Engineering Structures*, 50, 197–206. doi:10.1016/j.engstruct.2012.10.006 Q1