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**Distinguished Professor of Structural Engineering,**

**School of Civil Engineering,**

**Iran University of Science and Technology (IUST), Tehran, Iran**

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**Office: +98-21-77240104**

**Cell phone: +98-912-4396980**

**Fax: +98-21-77240398**

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| **PERSONAL IDENTITIES** |

**Given Name:** Ali

**Family Name:** Kaveh

**Date and Place of Birth:** 03.03.1948, Tabriz, Iran

**Nationality:** Iranian

**Marital Status:** Married (with 3 children)

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| **POSITIONS** |

* Assistant Professor, IUST, 1974-1979.
* Associate Professor, IUST, 1979-1985.
* Guest Professor, TU-Vienna, 1985-1986.
* Full Professor, IUST, 1985-1991.
* Guest Professor, TU- Vienna, 1991-1992.
* Full Professor, IUST, 1992-May 1993.
* Guest Professor, GH-Essen, June 1993-September 1993.
* Full Professor, IUST, October 1993-1994.
* Guest Professor, TU- Vienna, 1995-1996.
* Full Professor, IUST, October 1996-2003.
* Guest Professor, TU- Vienna, 2003-2004.
* Visiting Researcher at LMC for One Month in 2004
* Full Professor, IUST, October 2003-2008.
* Guest Professor, TU- Vienna, 2008-2009.
* Full Professor, IUST, October 2008-2015.
* Guest Professor, TU- Vienna, April 2015-August 2015.
* Full Professor, IUST August 2015-October 2016.
* Distinguished Professor, IUST, October 2016-2017.
* Guest Scholar, TU- Vienna, July 2017-January 2018.
* Distinguished Professor, IUST, 2018-July 2019.
* Guest Scholar, TU- Vienna, July 2019-September 2019.
* Distinguished Professor, IUST, 2019-Present.

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| **EDUCATION** |

* **BSc of Civil Engineering – Tabriz University (1969)**
* **MSc of Civil Engineering in the field of Structural Engineering (1971)**

Imperial College – London University – London – United Kingdom

* **DIC of Civil Engineering in the field of Structural Engineering (1971)**

Imperial College – London University – London – United Kingdom

* **PhD of Civil Engineering in the field of Structural Engineering (1974)**

Imperial College – London University – London – United Kingdom

* **Dipl. Ing of Civil Engineering (1991)**

Technical University of Vienna – Vienna – Austria

* **Dr. Tech of Civil Engineering (1993)**

Technical University of Vienna – Vienna – Austria

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| **MEMBERSHIPS** |

* **ACADEMIES**
* **Fellow of the Iranian Academy of Science (FIAS) since 1997.**
* **Fellow of the World Academy of Sciences (FTWAS) since 2006.**
* **Active Member of the European Academy of Sciences and Arts (AMEASA) since 2015.**
* **SOCIETIES**
* Fellow of the Iranian Society of Civil Engineering (FISCE).
* Associate Fellow of the Institute of Mathematics and its Applications (AFIMA).
* Member of International Society for the Interaction of Mechanics and Mathematics (ISIMM).
* Member of Association for Computational Mechanics (European Section).
* Member of American Mathematical Society (AMS).
* Former-Member of the Iranian Mathematical Society (IMS).
* Former-Member of Gesellschaft für Angewandte Mathematik und Mechanik (GAMM).
* Former-Member of the American Society of Civil Engineering (ASCE).
* Former-Member of the Society for Industrial and Applied Mathematics (SIAM).

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| **COMMUNICATION WITH NATIONAL and INTERNATIONAL JOURNALS** |

1. Asian Journal of Civil Engineering (Editor-in-Chief)
2. International Journal of Optimization in Civil Engineering (Editor-in-Chief)
3. Structures – Elsevier (Associate Editor)
4. Periodica Polytechnica (Editorial Board; Associate Editor)
5. Scientia Iranica (Advisory Board; Senior Executive Editor)
6. Computers and Structures (Editorial Advisory Board)
7. Sharif Journal, Sharif University of Technology (Member of Editorial Board)
8. Journal of Technology Education, [Shahid Rajaee Teacher Training University](http://www.srttu.edu) (Member of Editorial Board)
9. Saffeh (Editorial Advisory Board)
10. The Open Civil Engineering Journal (Editorial Board; Associate Editor)
11. International Journal of Engineering, (Editorial Board)
12. Amirkabir Journal of Science and Technology (Former-Advisory Board)
13. Journal of Tabriz University (Advisory Board)
14. International Journal of Civil Engineering, IUST (Founder and Former -Editor-in-Chief)
15. Asian Journal of Structural Engineering (Former -Editor-in-Chief)
16. Iranian Journal of Science and Technology (Former -Advisory Board)
17. The Open Construction and Building Technology Journal (Editorial Board)
18. International Journal for Engineering and Applied Sciences (Editorial Board)
19. Intelligent Information Management (Editorial Board)
20. Applied Mathematics (Member of the Editorial Board)
21. Editorial/Reviewer Board Member: Journal of Advances in Applied & Computational Mathematics
22. Engineering Education, Iranian Academy of Sciences (Former -Editor-in-Chief, and Current Editorial Board Member)
23. Quarterly of Education of Technology (Editorial Board)
24. Civil Engineering and Urban Planning: An International Journal (Editorial Board)
25. I.J. Water Resources Engineering (Former -Editorial Board)
26. [Journal of Advances in Applied & Computational Mathematics](http://avantijn.com/index.php?subid=33694&option=com_acymailing&ctrl=url&urlid=58&mailid=59) (Editorial Board).
27. Journal of Modern Mechanical Engineering and Technology (Member of Editorial Board)
28. Current Trends in Civil & Structural Engineering (Member of Editorial Board)

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| **MEMBERSHIP OF SCIENTIFIC COMMETTEES** |

1. Third International Conference on Space Structures, Surrey, UK, 1984.
2. International Conference on Applied Mathematics, IUST, Tehran, 1991.
3. Fourth International Conference on Space Structures, Surrey, UK, 1993.
4. Iranian Congress on Numerical Methods in Engineering, Shiraz, 1993.
5. Civil-Comp 93, Edinburgh, UK, 1993.
6. First International Conference on Graphs and Mechanics, Poland, 1993.
7. International Conference on Applications of Fussy Systems, Iran, 1994.
8. Civil-Comp 95, Cambridge, UK, 1995.
9. Computational Structures Technology, Budapest, Hungary, 1996.
10. Mouchel Centenary Conference on Innovation in Civil Engineering, Cambridge, 1997.
11. Civil-Comp 98, Edinburgh, UK, 1998.
12. International Conference on Theoretical, Applied, Computational and Experimental Mechanics, Indian Institute of Technology, Kharagpur, India, 1998.
13. Fourth International Conference on Civil Engineering, Iran, 2000.
14. Civil and Structural Engineering Computing, Oxford, 1999.
15. Second International Conference on Graphs and Mechanics, Poland, 1999.
16. Civil and Structural Engineering Computing, Belgium, 2000.
17. Civil and Structural Engineering Computing, Austria, 2001.
18. Fifth International Conference on Space Structures, Surrey, UK, 2002.
19. The first M.I.T. Conference on Computational Fluid and Solid Mechanics, USA, 2001.
20. The second M.I.T. Conference on Computational Fluid and Solid Mechanics, USA, 2003.
21. Civil and Structural Engineering Computing, Prague, 2002.
22. Sixth Int. Conference on Civil Engineering, Isfahan-Iran, 2003.
23. Civil and Structural Engineering Computing, Netherlands, 2003.
24. Civil and Structural Engineering Computing, Lisbon, 2004.
25. The Tenth International Conference on Civil, Structural and Environmental Engineering Computing, Rome, Italy, 2005.
26. Civil and Structural Engineering Computing, Spain, 2006.
27. The Eleventh International Conference on Civil, Structural and Environmental Engineering Computing, St. Julians, Malta 2007.
28. Third International Conference on Computational Mechanics, Cape Town, South Africa 2007.
29. The Ninth International Conference on Computational Structures Technology, Athens, Greece, 2008.
30. The Twelfth International Conference on Civil, Structural and Environmental Engineering Computing, Madeira, Portugal, 2009.
31. Second Conference on Domestic Technology, IUST, Tehran, 2009.
32. Fourth International Conference on Structural Engineering, Mechanics and Computation, Cape Town, South Africa, 2010.
33. International Conference on Advances in Materials and Techniques in Civil Engineering India, 2010.
34. The Tenth International Conference on Computational Structures Technology, Valencia, Spain from 14-17 September 2010.
35. The First International Conference on Structural and Building Materials, Guangzhou, China, 7-9 January 2011.
36. The Thirteenth International Conference on Civil, Structural and Environmental Engineering Computing, Chania, Crete, Greece, 6-9 September 2011.
37. International Conference on Civil, Architectural and Hydraulic Engineering, Member of Scientific Committee, Zhangjiajie, China, 10-12 August 2012.
38. The Second International Conference on Structural and Building Materials, Hangzhou, China,
39. March 10-12, 2012.
40. The Eleventh International Conference on Computational Structures Technology, Dubrovnik, Croatia 4-7 September 2012.
41. Innovations in Concrete Construction Congress, Jalandhar Punjab India, 5-8 March 2013.
42. The Fourteenth International Conference on Civil, Structural and Environmental Engineering Computing (CC2013) is to be held in Cagliari, Sardinia, Italy from 3-6 September 2013.
43. The Third International Conference on Soft Computing Technology in Civil, Structural and Environmental Engineering, Cagliari, Sardinia, Italy, 3-6 September 2013.
44. Conference on Engineering and Applied Sciences Optimization (OPTI 2014), Kos Island, Greece on 4-6 June 2014.
45. The 15th EU/ME European Metaheuristics Community Workshop, Metaheuristics and Engineering, Istanbul, 24-25 March 2014.
46. The Twelfth International Conference on Computational Structures Technology (CST2014) Naples, Italy, 2-5 September 2014.
47. 2014 International Conference on Environmental Protection and Sustainable Ecological Development [EPSED2014], Wuhan, Hubei, China, 30 - 31 August 2014.
48. Third International Conference "Graph Modelling In Engineering", 22 - 24 June 2015, University of Bielsko-Biala, Poland.
49. The Seventh International Conference of Seismology and Earthquake Engineering (SEE7), Member of the Scientific Committee.
50. The Sixth International Conference on Structural Engineering, Mechanics and Computation, 5-7 September 2016, Cape Town, South Africa, International Advisory Board for SEMC 2016.
51. Fifth International Conference on Parallel, Distributed Computing Technologies and Applications (PDCTA-2016), Program Committee Member, Zurich, Switzerland, 2~3 January, 2016.
52. International Conference on Structural Dynamics EURODYN 2017, Member of the Scientific Committee, Rome, Italy, 10-13 September, 2017.
53. The fourth International Conference on Applied Mechanics, Mechatronics and Intelligent System (AMMIS-2016), Member of the Scientific Committee, Beijing, China, April 16-17, 2016.
54. Second International & sixth National Conference on Earthquake & Structures, Member of the Scientific Committee, October 14-15, 2015, ACECR of Kerman, Kerman, Iran.
55. World Symposium on Civil Engineering 2017 WSCE 2017, Member of the Scientific Committee, Hong Kong, 22-24 February, 2017.
56. Member of European Research Committee (Engineering) for the year 2014.
57. Member of TPC, International Conference on Mechanics, Civil Engineering and Transportation (ICMCT2016), November 4-6 of 2016, Guilin, China.
58. Bright Optimizer, International Student Competition in Structural Optimization Committee Member, 2017.
59. Member of Scientific Committee, International Conference on Civil Engineering, Architectural and Environmental Engineering (CEAEE 2017) to be held on May 27-28, 2017 in Guangzhou, China.
60. Member of Technical Committee, The 5th International Conference on Mapping and Remote Sensing (ICMRS 2017) to be held in Lushan, China, from Nov. 10-11, 2017.
61. Member of the Editorial Board, The Thirteenth International Conference on Computational Structures Technology (CST2018) will take place in Sitges, Barcelona, Spain, from September 4th to 6th 2018.
62. Member of the Editorial Board, The Tenth International Conference on Engineering Computational Technology (ECT2018) will take place in Sitges, Barcelona, Spain, September 4th to 6th 2018.
63. Member of the International Advisory Board for SEMC 2019: The Seventh International Conference on Structural Engineering, Mechanics and Computation, 2-4 September 2019, Cape Town, South Africa.
64. The 5th International Conference on Civil Engineering (ICCE2018), Nanchang, P.R. China, December 20th to 21st, 2018.
65. The 1st international conference on artificial intelligence and applied soft computing (ICAASOC 2019) is organized in the Cappadocia region, 2019.
66. Program committee member / Reviewer of the 7th International Conference of Networks and Communications (NC 2019), Zurich, Switzerland March 30~31, 2019.
67. Editor, Current Trends in Civil & Structural Engineering, 2018.
68. Member of Committee, International Conference on Railway Engineering, IUST, 2019.
69. Member of Scientific Commettee, the First International Conference on Optimization Driven Architectural Design (OPTARCH2019), Amman, Jordan on 5-7 November 2019.
70. Member of Scientific Committee, 3rd International Conference on Structures and Constructionn Management, Sharif University of Technology, 2019.
71. Editorial Advisory Board, The Fifth International Conference on Soft Computing and Optimization in Civil, Structural and Environmental Engineering**,** CIVIL-COMP-OPTI 2019, Riva Del Garda Congress Centre, Lake Garda, Italy, 16-19 September 2019.
72. Member of Advisory Board, International Conference on Sustainable Systems and Structures during 1-2 November 2019 at Maharaj Vijayaram Gajapathi Raj College of Engineering (Autonomous), Vizianagaram, Andhra Pradesh, India
73. Member of the Technical Committee of CCI2020-CFIS2020, Ferdowsi University, 2020.
74. Member of organizing committee of International Conference And Expo On Urban And Civil Engineering which will be held during June 15-16, 2020 in Montreal, Canada.
75. Organizing Committee Member (OCM) to “International Conference and Expo on Infrastructure and Construction” , June 11-12, 2020 in Kuala Lumpur, Malaysia.
76. Scientific Commettee Member,[**The 6th International Conference on Civil Engineering**](http://dmtrace.icce.easyace.cn/trace/v1/report?bid=518122&env=74346080502&mac=113964&mf=icce2019%40icce.easyace.cn&sac=0&tag=ICCE2019&tid=518122&to=alikaveh%40iust.ac.ir&tpl=&ts=1565774292&type=0&url=http%3A%2F%2F&v=1.0&sign=e6709f8f4b80c192337d8193184d3259) **(ICCE2019), December 21-22, 2019, Nanchang, China.**
77. **Member of Scientific Committee,** World Congress on Materials Science and Engineering, June 17-19, 2020, London, UK.
78. Member of Scientific Commettee, 12 th National Congress on Civil Engineering (NCCE), Sahand Unversity of Technology, 27-28 May 2020, Tabriz, Iran.
79. Member of Scientific Commettee, 6th International Conference on Harmony Search, Soft Computing and Applications (ICHSA 2020) 22-24 April 2020, Istanbul, Turkey.
80. Member of Organizing Committee, 3rd International Conference on Computer Science & Cloud Computing*,* July 20-21, 2020 at Montreal, Canada.
81. Member of Scientific Commettee, 12th Structural Engineering Convention - An International Event, Jaipur , India, 17th December to 19th December, 2020.
82. Member of Scientific Commettee, [International Conference on Ubiquitous Intelligent Systems (ICUIS 2020)](http://35043hdy.r.us-east-1.awstrack.me/L0/http:%2F%2Ficuis.in%2Findex.html/1/0100016e164ba2df-daad8047-2bab-4d27-af00-dc87e4b6da9e-000000/cXQwcIeGOyV7KBtw_vZzS_I_TfY=133) is being organized on 3-4, June 2020 Organized by Shree Venkateshwara Hi-Tech Engineering College, Tamil Nadu, India.
83. 2020 International Conference on Materials in Civil Engineering (MICE 2020) organizing committee, it is our great pleasure to invite you to join us as Technical Program Committee (TPC) member. Thanks for your time. MICE 2020 will be held on October 23-25, 2020 in Sanya, China.
84. Member of Scientific Commettee**, *EUROGEN 2021*, International Conference on Evolutionary and Deterministic Methods for Design, Optimization and Control, 17-19 May 2021, Athens, Greece.**
85. Member of Scientific Commettee, CEC-RIAEC 2020: IEEE CEC-33 Real-World and Industry Applications of Evolutionary Computation, USA.
86. Member of Scientific Commettee The 2020 4th International Conference on Civil Engineering, Architectural and Environmental Engineering (CEAEE 2020) tol be held on April 24-26, 2020 in Sanya, China.

# Committee Member, 5th International Conference on Computing Methodologies and Communication (ICCMC 2021), Surya Engineering College, 03-05, March 2021.

1. Editorial Advisory Board, [Journal of Advances in Applied & Computational Mathematics](http://scijpublishing.com/index.php?option=com_acymailing&ctrl=url&subid=88537&urlid=35&mailid=47" \o "Ctrl+Click or tap to follow the link), Poland.
2. Program Committee Member of the International Conference on Cloud, Big Data and IoT (CBIoT 2020).
3. Scientific Committee of International Seminar in Civil Engineering to be hold in the Tipaza University in Algeria, 2021.
4. A program committee member / Reviewer of **"6th International Conference on Computer Science, Information Technology and Applications (CSITA 2020)"**, **June 20~21, 2020, Dubai, UAE**.
5. Committeee Member,International Conference on Big Data, Blockchain and Security (BDBS 2020) ”to be held in August 22~23, 2020, Chennai, India, 2020.
6. Organizing committee Member at “Global Summit on Civil, Architectural and Environmental Engineering (GSCAEE2021)”, Barcelona, Spain from July 19-21, 2021.
7. Member of the conference committee of CEWCHE 2021, January 15-17, 2021 in zhengzhou, China.
8. International Advisory Board for SEMC 2022: The Eighth International Conference on Structural Engineering, Mechanics and Computation, 5–7 September 2022, Cape Town, South Africa.
9. The 9th International Symposium on Project Management (ISPM 2021). Organized by Institute of engineering management, Beijing University of Civil Engineering&Architecture and Hubei Zhongke Institute of Geology and Environment Technology. In 2021.
10. Organizing Committee Member at the Global Meet on Infrastructure and Construction (GMINFRA2022), Paris, France, August 22-24, 2022.

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| **AWARDS** |

1. **Educational Gold Medal**: awarded by the Iranian Ministry of Science and Education because of being the First Class Student during the Four Years of BSc Courses in Civil Engineering, 1965.
2. Ministry of Science and Higher Education Award: During 1970-1974 for Pursuing Studies toward a Ph.D. at Imperial College, London University.
3. **Alborz Foundation Prize**: awarded by Alborz Institute for the Distinguished Engineering Graduate of the Year in Iran, 1969.
4. Research Price: Awarded by the Ministry of Science and Higher Education for the Selected Research, 1977.
5. Irano - British Fellowship: Awarded by the Ministry of Higher Education, 1977.
6. **Book Prize**: Awarded by the Ministry of Culture for Writing the Best Book in the Field of Engineering, 1984.
7. Research Prize: Awarded by Iran University of Science and Technology, 1985.
8. Research Prize: Awarded by Iran University of Science and Technology, 1989, 1990 and 1993.
9. Kharazmi Research Prize, Ministry of Science and Higher Education, 1994.
10. Research Prize: Awarded by Iran University of Science and Technology, 1994.
11. Press Media Prize for Scientific Publications: Ministry of Culture IRI, 1995.
12. Distinguished Civil Engineering Research Award, Building and Housing Research Centre, 1996.
13. Book Prize for the Best Engineering book in English: Ministry of Culture IRI, 1997.
14. Gold Medal of 2000, ABI, 1999.
15. Research Prize, Iran University of Science and Technology, 1999.
16. **Distinguished Professor of Iran**, Ministry of Science and Higher Education, 2000.
17. Selected researcher of the Iran University of Science and Technology, 2000.
18. National Project Award at Iran University of Science and Technology, 2000.
19. **Distinguished Researcher award of Iran**, Ministry of Science and Research and Technology, 2000.
20. **Memorable Scientist of Iran in the field of Engineering**, Academy of Sciences and Press Media, 2001.
21. Selected Researcher of the Iran University of Science and Technology, 2001 and 2002.
22. **Distinguished Researcher Award of Iran**, Ministry of Science and Research and Technology, 2004.
23. Distinguished Researcher Award, Iran University of Science and Technology, 2004 and 2005.
24. Distinguished Researcher Award, Iran University of Science and Technology, 2006.
25. Distinguished Researcher Award of Iran, Ministry of Science and Research and Technology, 2006.
26. Distinguished Researcher Award, Iran University of Science and Technology, 2007.
27. Winner of the Afzalipour Prize, an Award Presented by University of Kerman, Iran, 2007.
28. Ranked First, Research Section, the First Iranian Civil Engineering Festival, 2008.
29. Ranked First, International books Section, the First Iranian Civil Engineering Festival, 2008.
30. Ranked First, Fundamental Research Section, the Second Yadvaree (Festival) Iranian Civil Engineering, Building and Housing Research Centre, 2008.
31. Distinguished Researcher Award, Iran University of Science and Technology, 2009.
32. Distinguished Researcher Award, Civil Engineering, Iran University of Science and Technology, 2010.
33. **Distinguished Professor and Researcher**, Allameh Tabatabaie Award, 2012.
34. Distinguished Researcher award, Civil Engineering, Iran University of Science and Technology, 2013.
35. Distinguished Professor of Engineering Day of Azerbaijan Provence, Engineering NGO of Azerbaijan, 2013.
36. Distinguished Researcher Award, Iran University of Science and Technology, 2014.
37. Books Award (Springer Books), Iran University of Science and Technology, 2014
38. Distinguished Researcher Award of Iran, Ministry of Science and Research and Technology, 2014.
39. Distinguished Researcher Award, Ranked First in Iran University of Science and Technology, and Ranked First in Department of Civil Engineering, 2015.
40. Elected Distinguished Professor of Iran University of Science and Technology, 2016.
41. Distinguished Researcher Award, Ranked Second in Iran University of Science and Technology, and Ranked First in Department of Civil Engineering, 2016.
42. Ranked 111th in the most cited researchers in the field of Civil Engineering: The Most Cited Researchers: Developed for Shanghai Ranking's Global Ranking of Academic Subjects 2016 by Elsevier.
43. **Ranked 178th in the Most Cited Researchers** in the field of Computer Science Engineering: Developed for The Most Cited Researchers: Developed for Shanghai Ranking's Global Ranking of Academic Subjects 2016 by Elsevier. .
44. The World's Most Highly Cited Researchers Listed in 2017 by Clarivate Analytics (Ranked 1040th from 3539 Announced Scientists).
45. Distinguished Researcher Award, Ranked Second in Iran University of Science and Technology, and Ranked First in Civil Engineering Department, 2017.
46. The selected scientist of the Iranian Academy of Sciences to receive **The Badge of Knowledge** (Rank 1) **from the President of the IR Iran** in 2019.

دانشمند برگزیده فرهنگستان علوم در سال 1397 برای دریافت نشان درجه یک دانش از رئیس جمهور

1. Distinguished Researcher Award, Ranked Third in Iran University of Science and Technology, and Ranked First in Department of Civil Engineering, 2019.

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| **TEACHING and PROFESSIONAL EXPERIENCES** |

* Analysis and Design of Structures for More than 3 Years.
* Lecturing the Following Subjects for the last 45 Years in Different Universities in Undergraduate and Postgraduate Levels:
* Strength of Materials I and II.
* Theory of Structures I and II.
* Matrix Analysis of Structures with an Introduction to FEM.
* Plastic Analysis and Design of Structures.
* Optimal Analysis of Structures
* Graph Theoretical Approaches to Matrix Analysis of Structures.
* Application of Graph Theory and Topology in Civil Engineering.
* Supervision of MSc Seminars.
* Supervision of MSc and PhD theses.
* Consultant of the Iranian Building and Housing Research Centre, 1993-2010.
* Consultant of Nir Pars, 1994-1996.

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| **RESEARCH ACCOMPLISHMENTS** |

1. Graph Theory and its Generalization for Structural Mechanics:

* Kaveh has extensively applied graph theory to conceptual analysis of structures with particular attention to combinatorial properties of structures.

1. Force Method in Structural Analysis:

* The main development of this method is due to Kaveh. Two of his books cover these developments.

1. Sparse Matrix Techniques in Efficient Structural Analysis:

* Kaveh for bandwidth, profile and front width reduction of sparse matrices developed many new and efficient approaches.

1. Configuration Processing:

* Kaveh developed graph theory, set theoretical methods, and graph product methods for configuration processing of space structures and finite element models.

1. Conditioning of structural matrices:

* Suitable statical and kinematical bases are developed for improving the conditioning of flexibility (mesh) and stiffness (node) matrices of structures by Kaveh.

1. Decomposition of Large-scale Models:

* Graph and algebraic methods are developed by Kaveh for suitable decomposition of structural and finite element models suitable for parallel computing.

1. Optimal Analysis of Structures:

* Optimal analysis originally defined and developed by Kaveh leading to sparse, well-structured and well-conditioned structural and graph matrices. A book is published with this title for the first time.

1. Canonical Forms of Linear Algebra and Applications in Structural Mechanics:

* Canonical methods are developed by Kaveh and students for eigen-solution of special block matrices involved in structural mechanics.

1. Graph Products and Their Extensions and Applications:

* Graph products are utilized in characterization of regular graphs and eigen-solution of regular graph and structural matrices by Kaveh and his students. Some of these products are generalized for configuration processing of complex finite element models.

1. Symmetric and Regular Structures:

* The concepts of symmetry and regularity are developed and utilized in the swift analysis of structures and finite difference models by Kaveh and his students. A book is written with this title.

1. Finite Element Analysis Using Force Method:

* Many elements are developed by Kaveh and his students for analysis of continuums by the finite element force methods.

1. Optimal Design of Structures Using Novel Meta-heuristic Algorithms:

Many new meta-heuristic algorithms are developed by Kaveh and his research students. Examples are Charged System Search (CSS), Magnetic Charged System Search (MCSS), Democratic PSO (DPSO), Ray Optimization (RO), Dolphin Echolocation Optimization (DEO), Colliding Bodies Optimization (CBO), Enhances Colliding Bodies Optimization (ECBO), Tug of War Optimization (TWO), Natural Forest Regeneration (NFR), Water Evaporation Optimization (WEO), Vibrating Particle System (VPS), Cyclical Parthenogenesis Algorithm (CPA), Thermal Exchange Optimization (TEO), Lion Pride Optimization (LPO), Artificial Coronary Circulation System (ACCS) Algorithm, Billiards-inspired Optimization Algorithm (BIOA), Shuffled Shepherd Optimization Algorithm (SSOA), Set Theoretical Shuffled Shepherd Optimization Algorithm (STSSOA),Water Strider Algorithm (WSA), Plasma Generation Optimization (PGO), Doppler Effect-Mean Euclidian Distance Threshold (DE-MEDT).

These algorithms are used for different optimization problems. Seven books are written based on some of these algorithms.

1. Plastic Design of Frame Structures:

* Mathematical programming methods and meta-heuristic algorithms are applied to plastic analysis and design of frame structures.

1. Multi-objective Optimization and Seismic Design of Structures:

* Methods are developed and applied to seismic design of frame structures.

1. Optimal Analysis for Optimal Design:

* To facilitate the optimal design of large-scale problems, Kaveh and his students incorporate optimal analysis in optimal design of structures.

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| **PUBLICATIONS** |

* THESIS
* Lateral Torsional Buckling of H-section Beam Columns, M.Sc. thesis, Imperial College, London University, 1970.
* Applications of Topology and Matroid Theory to the Analysis of Structures, Ph.D. thesis, Imperial College of Science and Technology, London University, 1974.
* **BOOKS in English**

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| A. Kaveh,  Structural Mechanics: Graph and Matrix Methods, Research Studies Press (John Wiley), Exeter, U.K., 1992 (first edition, 346 pages), 1995 (second edition, 440 pages), 2004 (third edition, 422 pages).  Baldock, Hertfordshire, UK.  ISBN 0-86380-186-2/0-471-96028-4  (Fourth edition) Published by Overseas Press India Pvt. Ltd., 2006  ISBN 10: [8188689289](https://www.abebooks.co.uk/products/isbn/9788188689286?cm_sp=bdp-_-ISBN10-_-PLP) / ISBN 13: [9788188689286](https://www.abebooks.co.uk/products/isbn/9788188689286?cm_sp=bdp-_-ISBN13-_-PLP) | http://covers.openlibrary.org/b/olid/OL9311070M-M.jpg?default=false |
| A. Kaveh,  Optimal Structural Analysis, John Wiley (Research Studies Press) Chichester, U.K., 1997 (first edition, 550 pages), 2006 (second edition, 512 pages).  Optimal Force Method of Structural Analysis  Published Online: 5 SEP 2014  Wiley, Chichester, UK.  doi:10.1002/9780470033326  ISBN: 978-0-470-03015-8 |  |
| A.Kaveh,  Optimal Analysis of Structures by Concepts of Symmetry and Regularity, *Springer Verlag*, GmbH, Wien-NewYork, 2013.  ISBN 978-3-7091-1564-7  ISBN 978-3-7091-1565-7 (eBook)  DOI 10.1007/978-3-7091-1565-7 | cover2 (1) |
| A. Kaveh,  Computational Structural Analysis and Finite Element Methods, Springer Verlag, Springer International Publishing, Switzerland, 2014.  ISBN 978-3-319-02963-4  ISBN 978-3-319-02964-1 (eBook)  DOI 10.1007/978-3-319-02964-1 | cover |
| A. Kaveh,  Advances in Metaheuristic Algorithms for Optimal Design of Structures, Springer International Publishing, Switzerland, 1st edition (with 13 Chapters, 426 pages) 2014, 2nd edition (with 20 Chapters, 631 pages) 2017. 3rd edition (with 25 chapters, 870 pages) 2020.  ISBN 978-3-319-05548-0  ISBN 978-3-319-05549-7 (eBook)  DOI 10.1007/978-3-319-05549-7  ISBN : 978-3-030-59391-9  DOI 10.1007/978-3-030-59392-6   ISBN-10 : 3030593916   ISBN-13 : 978-3030593919 | https://eproofing.springer.com/books_v3/imagedump.php?token=pdxioljiWr4V1LCwex9g1daUOP61VUEfx1M7lT95rS_uF6zETBuDCg&cover=19783319461724 |
| A. Kaveh & V.R. Mahdavi,  Colliding Bodies Optimization: Extensions and Applications  Springer, Switzerland, 2015.  ISBN 978-3-319-19658-9  ISBN 978-3-319-19659-6 (eBook)  DOI 10.1007/978-3-319-19659-6 | https://images.springer.com/sgw/books/medium/9783319196589.jpg |
| A. Kaveh,  Applications of Metaheuristic Optimization Algorithms in Civil Engineering, Springer, Switzerland, 2017  DOI: 10.1007/978-3-319-48012-1 | 9783319480114 |
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167. Ali Kaveh, Seyyed Mahmoud Hamze-Ziabari, and Taha Bakhshpoori, M5' algorithm for shear strength prediction of HSC slender beams without web reinforcement, International *Conference* on Structural Dynamics EURODYN 2017, Paris 2017.
168. Ali Kaveh, (Keynote Lecture) Optimal Analysis of Structures and Application, 3rd International Conference on Applied Researches in Structural Engineering and Construction Management (secm2019)” Sharif University, Tehran, 5-6 June 2019.

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| **SUPERVISION of THESIS** |

* PhD STUDENTS

1. S. Nani, Graph Theory for Bandwidth and Profile Optimization of Structural Matrices, 1994. Joint Supervisor.
2. Abbas Mokhtarzadeh, Applications of graph Theory for Efficient Force Method, 1996, Sole Supervisor.
3. Ali Davaran, Analysis of Large-scale Structures Using concept of Graph Theory, Parallel Processing and Artificial Neural Networks, October 1997, Sole Supervisor.
4. Abbas Iranmanesh, Application of Artificial Neural Networks in Structural optimization, autumn 1998, Sole Supervisor.
5. Hossein Ali Rahimi Bondarabady, Optimal Structural Matrices for Efficient Analysis of Large-Scale Structures, Jan. 2001, Sole Supervisor.
6. Morteza Raiesi Dehkordi, Analysis and design of Dome Space Structures with Artificial Neural networks, September 2003, Sole Supervisor.
7. Ali Jafarvand, Analysis and Optimal Design of Foldable Space Structures, April 1998, Joint Supervisor.
8. Vahid Kalatjari, Optimization of Trusses Using Genetic Algorithm and the Algebraic Force Method, January 2002, Sole Supervisor.
9. Hossein Rahami, Combinatorial Optimization in Structural Mechanics, February 2006, Sole Supervisor.
10. Khalil Paryab, Application of Graph Theory for evaluating Eigenvalues and Eigenvectors in Structural Systems, Autumn 2004, Sole Supervisor.
11. Jafar Keyvani, Design and Analysis of Double Layer Grids Using Optimization and Neural Networks, March 2002, Joint Supervisor.
12. Kambiz Koohestani, Optimal Analysis of Finite Element Models via Force Method, Februray 2007, Joint Supervisor.
13. Saeed Shojaee Baghini, Optimal Design of Structures Using Metaheuristic Algorithms, IUST, January 2008, Sole Supervisor.
14. Mehdi Yousefi (joint supervision), Dynamic Behaviour of Bell Tower-Like Structures in Earthquake Environment, January 2008, Joint Supervisor with Prof. Heuer, Technical University of Vienna.
15. Mohsen Jahanshahi, Metaheuristic Algorithms for Plastic Analysis and Selection of Subminimal and Suboptimal Cycle Bases for the Force Method of Frame Analysis, May 2008, Joint Supervisor.
16. Mohammad Ali Sayarinejad, Decomposition and Healing of Graphs for Eigen Solution of Symmetric Models, IUST, October 2009, Sole Supervisor.
17. Maryam Daei, Applications of Heuristic Algorithms in Structural Mechanics, IUST, October 2009, Sole Supervisor.
18. Leila Shahryari, Symmetry and Canonical Forms for Free Vibration and Stability Analyses of Skeletal Structures using Displacement Method, IUST, November 2009, Joint Supervisor.
19. Behnoosh Salibahrami, Applications of Graph Products in Eigen Solution of Regular and Symmetric Structures, IUST, February 2010, Sole Supervisor.
20. Mahdi Nouri, Extension of the Application of Canonical Forms and Graph Products in Eigen Solutions of Repeated and Regular Problems of Structural Mechanics, Tabriz University, December 2010, Joint Supervisor.
21. Mazdak Nikbakht, Symmetry and regularity using groups, graphs and linear algebra, IUST, January 2011, Sole Supervisor.
22. Siamak Talatahari, Extension and hybridization of meta-heuristic algorithms for optimization of large-scale structures, Tabriz University, May 2011, Joint Supervisor.
23. Hadi Fazli, Eigen solution methods for structures with regular properties, IUST, September 2011, Sole Supervisor.
24. Babak Alinejad, Graph products and metaheuristic optimization methods in structural analysis and design IUST, June 2012, Sole Supervisor.
25. Karim Laknejadi, Graph theory and meta-heuristic methods for optimal design of structures, IUST, October 2012, Sole Supervisor.
26. Mohammad Saberi, Structural damage identification using enhanced charged system search algorithm, Azad University, June 2014, Sole Supervisor.
27. H. Mirhosseini, Graph products and different pattern of structural matrices in analysis using stiffness and force methods, Azad University, 2014, Joint Supervisor.
28. Mohammad Sajjad Masoudi, Optimal design of continuous finite element models via force method, IUST, 2014, Sole Supervisor.
29. Mohsen Kalateh-Ahani, Multi-optimization for performance-based design of steel structures, IUST, 2014, Sole Supervisor.
30. Mazyar Farzam, Optimal analysis and design of structures under seismic loading, IUST, 2014, Sole Supervisor.
31. Ali Zolgadr, New meta-heuristic algorithms for optimal design of skeletal structures with dynamic constraints, IUST, October 2015, Sole Supervisor.
32. Neda Farhoodi, Metaheuristic algorithms for optimal seismic design of structures, IUST, October 2015, Sole Supervisor.
33. Taha Bakhshpouri, Steel Structural Optimization with the Approach of Improving Metaheuristic Algorithms, IUST, January 2016. Sole Supervisor.
34. Majid Alipour, Scheduling optimization regarding resource limitation and uncertainties in construction projects, IUST, April 2016. Joint Supervisor.
35. Hossein Moez, Natural forest regeneration algorithm, a new metaheuristic for optimum design of skeletal structures, Tabriz University, May 2016, Joint Supervisor.
36. Vahid Reza Mahdavi, IUST, Development and applications of the colliding bodies optimization algorithm, Sole Supervisor, January 2017.
37. Majid Ilchi Ghazaan, IUST, Optimum seismic design of skeletal structures with large number of variables, Sole Supervisor. April 2017.
38. Sh. Bijari, IUST, Simultaneous optimal analysis and design of Structures, Sole Supervisor, September 2018.
39. Pedram Hosseini, Qom University, Improvement and correction of metaheuristic algorithms for direct and inverse optimization for skeletal structures, Joint Supervisor. August 2018.
40. M.H. Ghafari, IUST, Structural design optimization of composite steel-concrete, Sole Supervisor, September 2018.
41. M. Kooshkebaghi, Azad University, completred in September 2019.
42. M.R. Pishghadam, Optimal analysis for topology optimization of repetitive near-regular circulant shell structures, Zanjan University, Joint Supervisor, 2020.
43. Seyed Mohammad Javadi, IUST, Optimal Seismic Design of Skeletal Structures via Metaheuristic Algorithms and Chaos Theory, Sole Supervisor, June 2020.
44. M. Ghobadi, IUST, Sole Supervisor, completed in September 2020.
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1. N. Jocardis, Topology of double layer grids, IUST, 1994.
2. H. Adeli, Plastic analysis and design using combinatorial optimization and mathematical programming, IUST, 2001.
3. H.R. Yourdkhani, The optimum decomposition method for analysis of large-scale hydraulic network, IUST, 1995.
4. J. Blouri Bazaz, Optimum design of truss structure, Tarbiat Moddaress University, 1987.
5. S.M. Yousefi, Dynamic analysis of domes, BHRC, 1998.
6. A.H. Nazarian, Traveling Salesman problem, IUST Industry Engineering Department, IUST, 1993.
7. O.R. Shogli, Multi-objective optimization for controlling time-cost-quality, using ant colony algorithms, IUST, 2006.
8. S. Mortezavan, Analysis of large-scale hydraulic systems, 2000.
9. D. Bondar, Dynamic analysis of dams, 1990.
10. M. Sedehi, Nodal ordering for bandwidth reduction, Tarbiat Moddaress University, 1987.
11. M. Saberi, Optimum design of double layer barrel vaults, IUST, 1998.
12. S.M. Moussavi, Optimum data generation for space structures, Tarbiat Moddaress University, 1994.
13. M.R. Mashayekhi, Optimal analysis of mixed methods using graph theoretical approaches, IUST, 1993.
14. M. Ramazan Nejad, Analysis and design of planar frames using graph theory method and genetic algorithm, Azad University of Kerman University, 2003.
15. H. Dabbagh, Bandwidth reduction of rectangular matrices for optimal analysis of structures, IUST, 1990.
16. R. Ahmadi, Decomposition of large-scale structures, IUST, 1993.
17. M.R. Vakili, Analysis and design of trusses using artificial neural networks, Mazadaran University, 1996.
18. A.R. Khaleghi, Prediction of the strength of concrete specimen using neural networks, Azad University of Kerman, 1996.
19. M. Iranmanesh, Application of neural networks for analysis and design of single layer grids, Azad University of Kerman, 1998.
20. T. Asadi far, Analysis and design of Sahid Rajaie 220 meter tower, Arak University, 1998.
21. K. Sharif Zadeh, A comparative study of rigid plastic method and elastic-plastic approach for design of planar steel frames. IUST, 1995.
22. M. Ebrahimi, Configuration processing for analysis of large-scale space structures, IUST, 1995.
23. A. Gorbani Zavie Jaki, Optimal topology design of planar trusses, IUST, 1995.
24. A Nassier Oghli Khyabani, Analysis and design of planar trusses using combinatorial force method, IUST, 1998.
25. A. Shokohifar, Dynamic system for analysis of housing supply and market demand, IUST, 2000.
26. S. Kalantari, A pre-processor for identification of stress concentration in aerospace structures, IUST, 1995.
27. R. Asmarian Nasab, Non-linear behaviour of semi-rigid connections in steel structures, Mazdandaran University, 2000.
28. A.R. Rahimi Navassi, Configuration processing of space structures using graph theory, IUST, 2000.
29. F. Ghoya, Efficient analysis of structures using substructuring techniques, Sharif University of Technology, 1995.
30. M. Hosseini, Plastic analysis and design of frames using concepts of graph theory, BHRC, 2001.
31. A. Sabouhi, Spectral methods for nodal ordering using graph models of finite element meshes, IUST, 2004.
32. M. Babaie, Geometrically nonlinear analysis of foldable structures with scissor-link elements, IUST, 2003.
33. M. Nikbakht, Dynamic and stability analysis of symmetric structures using group theory, IUST, 2006.
34. H. Moez, Combinatorial force method for analysis of frames with semi-rigid joints, IUST, 2005.
35. V. Kaltjari, Reliability analysis of structural systems and the interaction with optimal design and degrees of static indeterminacy, IUST, 1991.
36. S. Mohammad Karimi, A fuzzy optimization model of earthwork allocation with imprecise parameters, IUST, 2005.
37. H. Fazli, Graph coloring in structural mechanics, IUST, 2007.
38. M. Hadjkarim Kharazi, Analysis and design of space frames using neural networks, IUST, 1998.
39. M. Shahrouzi, Approximate analysis of steel frames using optimum bracing, Sharif University of Technology, 2001.
40. R. Najjarzadeh, Frontwidth reduction for efficient finite element analysis, IUST, 1997.
41. S.A. Khalife Loo, Optimal plastic analysis and design of frame using force method and graph concepts, IUST, 1991.
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43. M. Pour Baba, Substructuring method fir analysis of large-scale structures using graph concepts, Babol University, 2001.
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45. A. Hajizadeh, Good starting node for ordering problems in structural analysis, IUST, 1997.
46. A. Asadi Rad, Bandwidth optimization for stiffness matrices of finite element meshes using algebraic graph theory, IUST, 1999.
47. M. Javanmard, Finite element analysis beams of elastic foundation, IUST, 1987.
48. F. Yasrebi, Parametric study for optimal design of space barrel vaults, 1996.
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65. B. Valli, Iterative solutions for structural analysis, IUST 1996.
66. R. Hooshmand, Optimum analysis and design of steel structures using object oriented programming, IUST, 1996.
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169. Morteza Abbasi, Reliability-based design optimization of Steel frame using meta-heuristic Algorithms, November 2019.
170. Aydin Mogannian, A comparative optimal design of double and triple layer grids, 2019.
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177. Elnaz Ghanbarpour, Multi-Objective Optimization of Two and Three Dimensional Trusses Based on Topology, Size, Material, and Geometry of Members and, Reliability Index of Structure, October 2020.
178. Arash Asadi, 2020.

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| **PROJECTS** |

* Rigidty of Structures, BHRC, 1998.
* Plastic Analysis and Design of Frame Structures, BHRC, 2000.
* Applications of Graph Theory in Optimal Analysis, Part 1, IUST, 2002.
* Applications of Graph Theory in Optimal Analysis, Part 2, IUST, 2002.
* Applications of Graph Theory in Optimal Analysis, Part 3, IUST, 2003.
* Applications of Graph Theory in Optimal Analysis, Part 3, IUST, 2004.
* Symmetry in Structural Mechanics, INSF, 2005.
* Applications of Graph Theory in Optimal Analaysis of Structures. INSF and IUST, 2006.
* Optimal Analysis and Design Using Genetic and Ant Colony Algorithms, INSF and IUST, 2007.
* Optimal Analysis and Design of Structures, INSF and IUST, 2008.
* Applications of Graph Theory and Meta-heuristic Algorithms in Optimal Analysis and Design, INSF and IUST, 2009.
* Meta-heuristic Algorithms in Optimal Analysis and Design of Structures, Part 1, INSF and IUST, 2010.
* Meta-heuristic Algorithms in Optimal Analysis and Design of Structures, Part 2, INSF and IUST, 2011.
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* Meta-heuristic Algorithms in Optimal Analysis and Design of Structures, Part 4, INSF and IUST, 2012.
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* Meta-heuristic Algorithms in Optimal Analysis and Design of Structures, Part 8, INSF and IUST, 2014.
* Meta-heuristic Algorithms in Optimal Analysis and Design of Structures, Part 9, INSF and IUST, 2015.
* Optimal Analysis and Design of Structures, Part 1, IUST, 2016.
* Optimal Analysis and Design of Structures, Part 2, IUST, 2017.
* Optimal Analysis and Design of Structures, Part 3, IUST, 2018.

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| **ADMINISTRATIVE ACTIVITIS** |

* Research Vice Chancellor of the Building and Hosing Research Centre (1 Year)
* Head of Centre of Excellence for Studies in Structural Engineering (12 Years)
* Head of Department of Engineering, Iranian Academy of Sciences (2 Years)
* Head of Civil Engineering Branch of the Iranian Academy of Sciences (4 Years)
* Member of the committee for Research, Iranian Academy of Sciences (3 Years)
* Member of the committee for Foresight, Iranian Academy of Sciences (1 Years)
* Member of the Engineering Committee of Journal Publications, Iranian Ministry of Science, Technology and Research (6 Years).
* Member of the Engineering Committee for Centers of Excellences, Iranian Ministry of Science, Technology and Research (4 Years).
* Member of the Promotion Committee in Engineering, Iranian Ministry of Science, Technology and Research (8 Years).
* Head of Structural Section, Iran University of Science and Technology (12 Years).
* Head of Civil Engineering Department, Iran University of Science and Technology (1/2 Years).
* Head of the Office for Research, Iran University of Science and Technology (1 Year).

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| **GOOGLE SCHOLAR** |

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