



IYTE Mimarlık Bölümü
MIAK Ulusal Akreditasyon Başvurusu 2020
Öğretim Elemanlarının Özgeçmişleri

EK 1.

1. Name, Surname, Title : Asst. Prof. Dr. Berk Ekici



2. Education Credentials :

Degree	Department	University	Year
B. Arch.	Architecture	Yaşar University	2011
M. Sc.	Architecture	Yaşar University	2014
Ph.D.	Architectural Engineering + Technology	TU Delft	2022

3. Academic Experience :

Title	Department	University/Place	Year
Asst. Prof.	Architecture	İzmir Institute of Technology / TR	2023-Present
Adj. Inst.	Architectural Engineering + Technology	TU Delft / NL	2019-2021
Adj. Inst.	Architecture	Yaşar University / TR	2019-2019
Res. Asst.	Architecture	Yaşar University / TR	2011-2019

4. Areas of Expertise in Architecture

- A. Computational design
- B. Performance based design
- C. Heuristic optimization in architecture
- D. Machine learning in building performance prediction

5. Courses Taught (Last One Year)

Academic Year	Semester	Code	Name of Course	Weekly Hours		Number of Students
				Theory	Application	
2022-2023	Fall	-	-			
		-	-			
		-	-			
	Spring	AR 313	Computer Aided Architectural Drawing	2	2	32
		AR 302	Architectural Design IV	4	8	17

6. Supervised Graduate Theses / Dissertations

6.1. Masters

MORA, F. F. "Humble giants: Computational intelligence for designing more sustainable high-rise buildings", Faculty of Architecture and the Built Environment, Department of Architectural Engineering and Technology, 2020. [Thesis link](#)



7. Publications

7.1. Articles published in international referred journals (SCI, SSCI, Arts and Humanities, Area Indexed)

- 1) **B. Ekici**, O. F. S. F. Turkcan, M. Turrin, I. S. Sariyildiz, M. F. Tasgetiren, "Optimising high-rise buildings for self-sufficiency in energy consumption and food production using artificial intelligence: Case of Europoint complex in Rotterdam", *Energies*, 2022, 15(2): 660. [Paper link](#)
- 2) **B. Ekici**, Z. T. Kazanasmaz, M. Turrin, M. F. Tasgetiren, I. S. Sariyildiz, "Multi-zone optimisation of high-rise buildings using artificial intelligence for sustainable metropolises. Part 1: Background, methodology, setup, and machine learning results", *Solar Energy*, 224, 373-389. [Paper link](#)
- 3) **B. Ekici**, Z. T. Kazanasmaz, M. Turrin, M. F. Tasgetiren, I. S. Sariyildiz, "Multi-zone optimisation of high-rise buildings using artificial intelligence for sustainable metropolises. Part 2: Optimisation problems, algorithms, results, and method validation", *Solar Energy*, 224: 309-326. [Paper link](#)
- 4) A. Kirimtat, O. Krejcar, **B. Ekici**, M. F. Tasgetiren, "Multi-objective energy and daylight optimization of amorphous shading devices in buildings", *Solar Energy*, 2019, 185: 100-111. [Paper link](#)
- 5) **B. Ekici**, C. Cubukcuoglu, M. Turrin, I. S. Sariyildiz, "Performative computational architecture using swarm and evolutionary optimisation: A review", *Building & Environment*, 2019, 147: 356-371. [Paper link](#)

7.2. Articles published in other international refereed journals

- 6) C. Cubukcuoglu, **B. Ekici**, M. F. Tasgetiren, I. S. Sariyildiz, "OPTIMUS: Self-adaptive differential evolution with ensemble of mutation strategies for grasshopper algorithmic modeling", *Algorithms*, 2019, 12(7): 141. [Paper link](#)

7.3. Papers presented in international conferences and published as proceedings

- 7) **B. Ekici**, S. Kutucu, I. S. Sariyildiz, M. F. Tasgetiren, "Addressing the high-rise form finding problem by evolutionary computation", *IEEE congress on evolutionary computation 2015, Sendai*, 2253- 2260. (Full paper oral presentation). [Paper link](#)
- 8) N. P. Unlu, **B. Ekici**, I. Chatzikonstantinou, I. S. Sariyildiz, M. F. Tasgetiren, C. Cubukcuoglu, "Diagrid façade design for public pool building using differential evolution", *Twelfth international tools and methods of competitive engineering symposium, 2018, Las Palmas de Gran Canaria*, 265-274. (Full paper presentation). [Paper link](#)
- 9) E. Yildirim, **B. Ekici**, C. Cubukcuoglu, I. Chatzikonstantinou, I. S. Sariyildiz, A. H. L. Chen, "Optimization of free form long span roof structure for pool facility using evolutionary algorithms", *International symposium for production research 2017, Wien*, 891-902. (Full paper presentation).
- 10) M. Paldrak, C. Cubukcuoglu, **B. Ekici**, M. F. Tasgetiren, A. Cilasun Kunduraci, "Diagrid and honeycomb façade design optimization with multi-objective evolutionary algorithms", *International symposium for production research 2017, Wien*, 555-567. (Full paper presentation).
- 11) G. Yavuzarslan, **B. Ekici**, C. Cubukcuoglu, A. Cilasun Kunduraci, B. Kundakci Koyunbaba, "Envelope design of healthcare public space using multi-objective optimization", *International symposium for production research 2017, Wien*, 867-880. (Full paper presentation).
- 12) N. P. Unlu, M. F. Tasgetiren, **B. Ekici**, C. Cubukcuoglu, I. Chatzikonstantinou, "Structure optimization of shelter design for semi-closed public space in urban", *International symposium for production research 2017, Wien*, 811-823. (Full paper presentation).
- 13) F. Ozbey, C. Cubukcuoglu, **B. Ekici**, A. Cilasun Kunduraci, I. Chatzikonstantinou, "Bi-objective visual perception optimization for a healthcare education facility", *International symposium for production research 2017, Wien*, 511-520. (Full paper presentation).



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- 14) A. O. Gorgun, C. Cubukcuoglu, **B. Ekici**, B. Kundakci Koyunbaba, I. Kahraman, "Diagrid façade design using multi-objective evolutionary algorithms", International symposium for production research 2017, Wien, 331-344. (Full paper presentation).
- 15) B. Yıldız, **B. Ekici**, I. Chatzikonstantinou, S. Kutucu, I. S. Sariyildiz, "Visual perception based multi-objective optimization to housing design in urban context", International symposium for production research 2017, Wien, 903-914. (Full paper presentation).
- 16) S. Karaman, **B. Ekici**, C. Cubukcuoglu, B. Kundakci Koyunbaba, I. Kahraman, "Design of rectangular façade modules through computational intelligence: Case of common space in healthcare building", IEEE congress on evolutionary computation 2017, San Sebastian, 1021-1028. (Full paper presentation). [Paper link](#)
- 17) M. Yufka, **B. Ekici**, C. Cubukcuoglu, I. Chatzikonstantinou, I. S. Sariyildiz, "Multi-objective skylight optimization for a healthcare facility foyer space", IEEE congress on evolutionary computation 2017, San Sebastian, 1008-1014. (Full paper presentation). [Paper link](#)
- 18) E. E. Aydin, O. Dursun, I. Chatzikonstantinou, **B. Ekici**, "Optimisation of energy consumption and daylighting using building performance surrogate model", 49th international conference of the architectural science association 2015, Melbourne, 536-546. (Full paper presentation). [Paper link](#)
- 19) I. Chatzikonstantinou, **B. Ekici**, I. S. Sariyildiz, B. Kundakci Koyunbaba, "Multi-objective diagrid façade optimization using differential evolution". IEEE congress on evolutionary computation 2015, Sendai, 2311-2318. (Full paper presentation). [Paper link](#)
- 20) O. Dursun, **B. Ekici**, I. S. Sariyildiz, "Time-cost optimization at the conceptual design stage using differential evolution: Case of single-family housing projects in Germany", IEEE congress on evolutionary computation 2015, Sendai, 2237-2244. (Full paper presentation). [Paper link](#)
- 21) **B. Ekici**, Z. T. Kazanasmaz, M. Turrin, M. F. Tasgetiren, I. S. Sariyildiz, "A Methodology for daylight optimisation of high-rise buildings in the dense urban district using overhang length and glazing type variables with surrogate modelling", Journal of Physics: Conference Series 1343 (1), 012133, CISBAT 2019, Lausanne. (Poster presentation). [Paper link](#) – [Poster link](#)
- 22) E. Kurtbas, C. Cubukcuoglu, **B. Ekici**, A. Cilasun Kunduraci, I. Kahraman, "Addressing a façade design for healthcare facility using multi-objective optimization", International symposium for production research 2017, Wien, 481-494. (Presented by Prof. Dr. M. Fatih Tasgetiren).
- 23) **B. Ekici**, I. Chatzikonstantinou, I. S. Sariyildiz, M. F. Tasgetiren, Q. K. Pan, "A Multi-objective self-adaptive differential evolution algorithm for conceptual high-rise building design", IEEE World congress on computational intelligence 2016, Vancouver, 2272-2279. [Paper link](#)
- 24) C. Cubukcuoglu, I. Chatzikonstantinou, **B. Ekici**, I. S. Sariyildiz, M. F. Tasgetiren, "Multi-objective optimization through differential evolution for restaurant design", IEEE World congress on computational intelligence 2016, Vancouver, 2288-2295. [Paper link](#)

7.4. International books or chapters

- 25) **B. Ekici**, "Towards self-sufficient high-rises: Performance optimization using artificial intelligence", 2022, Doctoral Dissertation, DOI: 10.7480/abe.2022.10, Publisher: A+BE | Architecture and the Built Environment. [Thesis link](#)
- 26) C. Cubukcuoglu, A. Kirimat, **B. Ekici**, M. F. Tasgetiren, P. N. Suganthan, "Evolutionary computation for theatre hall acoustics", Optimization in industry - Present practices and future scopes, 2019, Pp: 55- 83, Publisher: Springer. [Chapter link](#)
- 27) E. Cevizci, S. Kutucu, M. Morales-Beltran, **B. Ekici**, M. F. Tasgetiren, "Structural optimization for masonry shell design using multi-objective evolutionary algorithms", Optimization in industry - Present practices and future scopes, 2019, Pp:85-119, Publisher: Springer. [Chapter link](#)
- 28) A. Kirimat, **B. Ekici**, C. Cubukcuoglu, I. S. Sariyildiz, M. F. Tasgetiren, "Evolutionary algorithms for designing self-sufficient floating neighborhoods", Optimization in industry - Present practices and future scopes, 2019, Pp: 121-147 Publisher: Springer. [Chapter link](#)



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7.5. Articles published in national refereed journals

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7.6. Papers presented in national conferences and published as proceedings

29) **B. Ekici** and S. Kutucu, "Bilgisayar destekli kavramsal tasarım yaklaşımı ve çoklu performansa dayalı tümleşik yüksek yapılar (Computer aided conceptual design approach and multi-performance based integrated high-rise buildings)", 8. mimarlıkta sayısal tasarım ulusal sempozyumu 2014, İzmir, 85-94. (Full paper oral presentation)

30) **B. Ekici**, and E. Özmehmet, "Çok yönlü bina enerji yazılım araçlarının analizi (Analysis of multi-purpose building energy software tools)", Sürdürülebilir yapı tasarımı kongresi bildiriler kitabı 2012, İzmir, 163-176. (Full paper oral presentation)

7.7. National books or chapters

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7.8. Other Publications

31) **B. Ekici**, O.F. S. F. Turkan, M. Turrin, I. S. Sariyildiz, M. F. Tasgetiren, "Multi-zone simulation results of Europoint complex for self-sufficiency in energy consumption and food production in Rotterdam", TU Delft - 4TU Centre for research data, 2021, <https://doi.org/10.4121/17129420.v1>

32) **B. Ekici**, Z. T. Kazanasmaz, M. Turrin, M. F. Tasgetiren, I. S. Sariyildiz, "Multi-zone simulation results on ASE and sDA daylight metrics for parametric high-rise model with quad grid and diagrid façade in a highly dense hypothetical urban district using dry summer climate weather data", TU Delft - 4TU Centre for research data, 2020, <https://doi.org/10.4121/UUID:8538AC2F-3A78-4923-8FCA-5BEB50017299>

33) **B. Ekici**, I. Chatzikonstantinou, S. Sariyildiz, F. Tasgetiren "Kavramsal yüksek bina tasarımı için çok amaçlı diferansiyel evrim algoritması", Yöneylem araştırması endüstri mühendisliği 36. Ulusal kongresi, 2016, Yaşar University - İzmir, pg.68. (Abstract presentation)

34) **B. Ekici**, S. Kutucu, S. Sariyildiz, F. Tasgetiren "Evrimsel hesaplamalar ile yüksek bina form bulma probleminin irdelenmesi", Yöneylem araştırması endüstri mühendisliği 35. Ulusal kongresi, 2015, METU - Ankara, pg.187. (Abstract presentation)

35) C. Cubukcuoglu, I. Chatzikonstantinou, **B. Ekici**, M. F. Tasgetiren, S. Sariyildiz "Restoran tasarımı optimizasyonu için çok amaçlı diferansiyel evrim algoritması", Yöneylem araştırması endüstri mühendisliği 36. Ulusal kongresi, 2016, Yaşar University - İzmir, pg.69. (Abstract presentation)

36) O. Dursun, **B. Ekici**, S. Sariyildiz "Farksal evrim algoritması ile kavramsal tasarım aşamasında konut maliyet ve süre optimizasyonu", Yöneylem araştırması endüstri mühendisliği 35. Ulusal kongresi, 2015, METU - Ankara, pg.186. (Abstract presentation)

8. Scientific Research Projects

A. Terrestrial Laser Scanning Technologies in Cultural Heritage Documentation · Approved by Yaşar University Research Center (22.12.2017 – 09.08.2018), Budget: 190.876,00 TL, Role: Researcher.

B. Designing Asymmetric Shaped Shell System with Aerated Concrete Blocks using Computational Design Techniques · Approved by Yaşar University Research Center (22.08.2016 – 01.03.2018), Budget: 24.895,00 TL, Role: Consultant.



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C. An Approach for Energy Efficient Retrofit of Architectural Studio Building in University Campus İzmir (Project No: 114M803) · Approved by TÜBİTAK "The Scientific and Technological Research Council of Turkey" (01.09.2014 – 01.10.2016), Budget: 58.000,00 TL, Role: Researcher.

9. Administrative Duties

Name of Duty	University	Year
Human Resources Strategy for Researchers – HRS4R	İzmir Institute of Technology	04.2023 – Present
Iztech Sustainable Green Campus Committee	İzmir Institute of Technology	03.2023 – Present

10. Memberships / Fellowships

- A. TU Delft for Life, 06.2022 – Present
- B. AA Visiting School of Architecture, 2012 – 2013
- C. Council on Tall Buildings and Urban Habitat, 2012 – 2013

11. Awards

- A. Best junior contribution paper award, 12th international symposium on TMCE, 2018 Las Palmas
- B. Travel grant, COST action 1403 adaptive façade network, 2018 Belgrade
- C. 5 years of service acknowledgement, Yaşar University, 2017 İzmir
- D. Letter of appreciation, Jandarma Genel Komutanlığı/2'nci J. Eğ. B. K., 2015 Kastamonu
- E. 3rd honorable mention, Uşak bus terminal complex national competition, 2012 Uşak
- F. 4th honorable mention, Manisa municipality building national competition, 2011 Manisa
- G. Top student of the department, 2011 Yaşar University
- H. Plate, Chamber of Architects İzmir Branch, 2011 İzmir
- I. Dean's success award, 2011 Yaşar University
- J. High honor award (2 times), 2008 Yaşar University

12. Other (Design, Art, or related Events involved)

A. Guest Editor

AI in energy efficient buildings https://www.mdpi.com/journal/energies/special_issues/29R2U21IQ3

B. Invited Reviewer (Journals)

Taylor & Francis: Architectural engineering and design management, Building research and information, Ambient energy.

Elsevier: Automation in construction, Building and environment, Energy and buildings, Solar energy, Structures, Applied energy, Frontiers of architectural research.

MDPI: Sustainability, Buildings, Energies.



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SAGE: Simulation.

TU Delft OPEN: Journal of façade design and engineering.

C. Invited Reviewer (Conferences)

Caad Futures 2023 held in TU Delft.

D. Organizations

Technical committee member: 2016 IEEE world congress on computational intelligence, Vancouver, Canada (www.wcci2016.org). Title: Special session no 36: Evolutionary computation in architectural design

Technical committee member: 2015 IEEE congress on evolutionary computation, Sendai, Japan (www.cec2015.org). Title: Special session no 41: Evolutionary computation in architectural design.

Assisting international symposium organization: 2012 computational design international symposium and workshop (Contributors: Yaşar University, TU Delft, University of Salford, Polytechnic of Turin, İzmir University of Economics).

E. Invited Talks & Lectures

“Surrogate Modelling in Performative Computational Architecture” in Building Technology Master Track, AR0202: Computational Intelligence of Integrated Design. Organised by Asst. Prof. Dr. Charalampos P. Andriotis & Assoc. Prof. Dr. Michela Turrin, TU Delft, 15.03.2023.

“A lecture and workshop on optimisation algorithms” in Spatial Computing Computational Design Studio. Organised by Ir. Hans Hoogenboom, Design Informatics Chair, TU Delft, 05.12.2022.

“Advanced computational workflows for façade designs” in Smart Skins Lecture Series. Organised by Asst. Prof. Dr. Jonathan Natanian, Environmental Performance and Design Laboratory, Technion Israel Institute of Technology, 24.11.2022.

“Towards self-sufficient high-rises: Performance optimisation using artificial intelligence” in Online Lecture Series. Organised by Lec. Nilufer İrem Soysal, Institute for Art & Culture, 23.11.2022.

“Computational intelligence in decision making” in MEGA 2018 – Design Informatics Workshop. Organised by Asst. Prof. Dr. Michela Turrin, Design Informatics Chair, TU Delft 08.05.2018.

F. Workshops and Seminars (Attended)

Adaptive façades training school, 2018 Belgrade.

Application of asymmetric shell structures workshop, 2017 Yaşar University.

MOBBİG 35, 2012 Yaşar University.

The art of speech, 2012 Yaşar University.

Architectural Association (AA) visiting school, 2012 İstanbul Technical University.

Time and space workshop, 2009 Dokuz Eylül University.

Speed reading with comprehension, 2006 İzmir.

G. Visiting

Universidad Politecnica de Valencia, Spain, 01.2013-07.2013, MSc research (Sabbatical & Erasmus)

Michele Gambato Architetto, Padua/Italy, 06.2010-09.2010, BSc trainee (Erasmus Internship)