

Hasan Sözer

Curriculum Vitæ

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Education

- 2009 **Ph.D. in Computer Science**, *University of Twente*, Enschede, The Netherlands.
Advisors: Dr. Bedir Tekinerdoğan and Dr. Mehmet Akşit
Thesis title: "Architecting Fault-Tolerant Software Systems"
- 2004 **M.Sc. in Computer Engineering**, *Bilkent University*, Ankara, Türkiye.
Advisor: Dr. İbrahim Körpeoğlu
Thesis title: "A Peer-to-Peer File Sharing System for Wireless Ad-Hoc Networks"
- 2002 **B.Sc. in Computer Engineering**, *Bilkent University*, Ankara, Türkiye.

Employment

- 2023 – present **Professor**, *Ozyegin University*, İstanbul, Türkiye.
Department of Computer Science
- 2017 – 2023 **Associate Professor**, *Ozyegin University*, İstanbul, Türkiye.
Department of Computer Science
- 2011 – 2017 **Assistant Professor**, *Ozyegin University*, İstanbul, Türkiye.
Department of Computer Science
- 2009 – 2011 **Post-doctoral Researcher**, *University of Twente*, Enschede, The Netherlands.
Faculty of Electrical Engineering, Mathematics and Computer Science
- 2005 – 2009 **Ph.D. Associate**, *University of Twente*, Enschede, The Netherlands.
Faculty of Electrical Engineering, Mathematics and Computer Science
- 2002 – 2005 **Software Engineer**, *Aselsan Inc.*, Ankara, Türkiye.
Radar, Electronic Warfare and Intelligence Systems Division

Research

Research Interests

Software Engineering
Software Architecture Design
Software Testing and Analysis
Software Fault Tolerance
Self-adaptive and Distributed Systems

Research Projects

- 2026 – 2028 Migration from Monolith Systems to Microservices using Hypergraph and Artificial Intelligence Models
Principal Investigator, Ozyegin University, İstanbul, Türkiye
Industrial partner: KocSistem
Funded by the Scientific and Technological Research Council of Türkiye
- 2025 – 2026 European Lighthouse to Manifest Trustworthy and Green AI
Researcher, SINTEF Digital, Oslo, Norway
Funded by the European Union
- 2025 – 2026 Automatic Evaluation of Software Coding Exams
Researcher, Ozyegin University, İstanbul, Türkiye
Funded by the Scientific and Technological Research Council of Türkiye
- 2024 – 2026 Development of a Solution Method for Scheduling Refrigerator R&D Test Rooms
Researcher, Ozyegin University, İstanbul, Türkiye
Industrial partner: Vestel Electronics
Funded by the Scientific and Technological Research Council of Türkiye
- 2021 – 2024 Recovery of Modular Software Architectures with Exact & Heuristic Clustering Methods
Principal Investigator, Ozyegin University, İstanbul, Türkiye
Industrial partner: Turkcell Technology
Funded by the Scientific and Technological Research Council of Türkiye
- 2020 – 2023 Fault-Based Test Modeling of Blockchain Based Security Solutions in Financial Systems
Researcher, Ozyegin University, İstanbul, Türkiye
Industrial partner: Fibabanka
Funded by the Scientific and Technological Research Council of Türkiye
- 2014 – 2017 Automated Model Refinement for Model-based Testing
Principal Investigator, Ozyegin University, İstanbul, Türkiye
Industrial partner: Vestel Electronics
Funded by the Turkish Ministry of Science, Industry and Technology
- 2014 – 2017 Automated Integration of Static and Dynamic Software Analysis Techniques
Principal Investigator, Ozyegin University, İstanbul, Türkiye
Funded by the Scientific and Technological Research Council of Türkiye
- 2012 – 2014 Fault Handling and Quality Optimization in Service-Oriented Systems
Principal Investigator, Ozyegin University, İstanbul, Türkiye
Industrial partner: Vestel Electronics
Funded by the Turkish Ministry of Science, Industry and Technology
- 2012 – 2014 Crew Pairing and Fleet Assignment Models for Turkish Airlines
Researcher, Ozyegin University, İstanbul, Türkiye
Industrial partner: Turkish Airlines
Funded by the Scientific and Technological Research Council of Türkiye

- 2009 – 2011 Octopus: Smart System Adaptability
Researcher, Embedded Systems Institute, Eindhoven, The Netherlands
Carrying industrial partner: Canon Nederland
Funded by the Netherlands Ministry of Economic Affairs
- 2005 – 2009 Trader: Reliability by Design
Researcher, Embedded Systems Institute, Eindhoven, The Netherlands
Carrying industrial partner: NXP
Funded by the Netherlands Ministry of Economic Affairs

Publications

Journal Articles

- [1] T. Varol, M. Elyasi, T.H. Aktas, O.O. Ozener, and H. Sozer. Parallelization of genetic algorithms for software architecture recovery. *Automated Software Engineering*, 32(9):1–24, 2025.
- [2] A. Elakas, H. Sozer, I. Safak, and K. Kalkan. A systematic mapping on software testing for blockchains. *Cluster Computing*, 27(6):7111–7126, 2024.
- [3] E. Ersoy, E. Callı, B. Erdogan, S. Bagriyanik, and H. Sozer. A longitudinal case study on Nexus transformation: Impact on productivity, quality, and motivation. *Journal of Software: Evolution and Process*, 36(5):e2615, 2024.
- [4] M. Elyasi, M.E. Simitcioglu, A. Saydemir, A. Ekici, O.O. Ozener, and H. Sozer. Genetic algorithms and heuristics hybridized for software architecture recovery. *Automated Software Engineering*, 30(19):1–24, 2023.
- [5] S. Dirim, O.O. Ozener, and H. Sozer. Prioritization and parallel execution of test cases for certification testing of embedded systems. *Software Quality Journal*, 31(2):471–496, 2023.
- [6] N. Sunman, Y. Soydan, and H. Sozer. Automated web application testing driven by pre-recorded test cases. *Journal of Systems and Software*, 193:111441, 2022.
- [7] A.B. Tarimci and H. Sozer. Mutation testing of PL/SQL programs. *Journal of Systems and Software*, 192:111399, 2022.
- [8] E. Ersoy and H. Sozer. Using artificial neural networks to provide guidance in extending PL/SQL programs. *Software Quality Journal*, 30(4):885–916, 2022.
- [9] M. Gokceoglu and H. Sozer. Automated defect prioritization based on defects resolved at various project periods. *Journal of Systems and Software*, 179:110993, 2021.
- [10] O.O. Ozener and H. Sozer. An effective formulation of the multi-criteria test suite minimization problem. *Journal of Systems and Software*, 168:110632, 2020.
- [11] A.E. Genc, H. Sozer, M.F. Kirac, and B. Aktemur. ADVISOR: An adjustable framework for test oracle automation of visual output systems. *IEEE Transactions on Reliability*, 69(3):1050–1063, 2020.
- [12] M. Astekin, H. Zengin, and H. Sozer. DILAF: A framework for distributed analysis of large-scale system logs for anomaly detection. *Software: Practice and Experience*, 49(2):153–170, 2019.
- [13] M.F. Kirac, B. Aktemur, H. Sozer, and C.S. Gebizli. Automatically learning usage behavior and generating event sequences for black-box testing of reactive systems. *Software Quality Journal*, 27(2):861–883, 2019.
- [14] C.S. Gebizli, A. Kirkici, and H. Sozer. Increasing test efficiency by risk-driven model-based testing. *Journal of Systems and Software*, 144:356–365, 2018.

- [15] M.F. Kirac, B. Aktemur, and H. Sozer. VISOR: A fast image processing pipeline with scaling and translation invariance for test oracle automation of visual output systems. *Journal of Systems and Software*, 136:266–277, 2018.
- [16] H. Sozer and C.S. Gebizli. Model-based testing of Digital TVs: An industry-as-laboratory approach. *Software Quality Journal*, 25(4):1185–1202, 2017.
- [17] C.S. Gebizli and H. Sozer. Automated refinement of models for model-based testing using exploratory testing. *Software Quality Journal*, 25(3):979–1005, 2017.
- [18] O.O. Ozener, M. Ormeci Matoglu, G. Erdogan, M. Haouari, and H. Sozer. Solving a large-scale integrated fleet assignment and crew pairing problem. *Annals of Operations Research*, 253(1):477–500, 2017.
- [19] H. Sozer, M. Stoelinga, H. Boudali, and M. Aksit. Availability analysis of software architecture decomposition alternatives for local recovery. *Software Quality Journal*, 25(2):553–579, 2017.
- [20] G. Karagoz and H. Sozer. Reproducing failures based on semi-formal failure scenario descriptions. *Software Quality Journal*, 25(1):111–129, 2017.
- [21] T. Ayav and H. Sozer. Identifying critical architectural components with spectral analysis of fault trees. *Applied Soft Computing*, 49:1270–1282, 2016.
- [22] H. Sozer. Integrated static code analysis and runtime verification. *Software: Practice and Experience*, 45(10):1359–1373, 2014.
- [23] K. Gulcu, H. Sozer, B. Aktemur, and A.O. Ercan. Fault masking as a service. *Software: Practice and Experience*, 44(7):838–854, 2014.
- [24] A. de Roo, H. Sozer, and M. Aksit. Composing domain-specific physical models with general-purpose software modules in embedded control software. *Software and Systems Modeling*, 13(1):55–81, 2014.
- [25] A. de Roo, H. Sozer, L. Bergmans, and M. Aksit. MOO: An architectural framework for runtime optimization of multiple system objectives in embedded control software. *Journal of Systems and Software*, 86(10):2502–2519, 2013.
- [26] H. Sozer, B. Tekinerdogan, and M. Aksit. Optimizing decomposition of software architecture for local recovery. *Software Quality Journal*, 21(2):203–240, 2013.
- [27] B. Tekinerdogan, H. Sozer, and M. Aksit. Feature-based rationale management system for supporting software architecture adaptation. *International Journal of Software Engineering and Knowledge Engineering*, 22(7):945–964, 2012.
- [28] A. de Roo, H. Sozer, and M. Aksit. Verification and analysis of domain-specific models of physical characteristics in embedded control software. *Information and Software Technology*, 54(12):1432–1453, 2012.
- [29] H. Sozer, B. Tekinerdogan, and M. Aksit. FLORA: A framework for decomposing software architecture to introduce local recovery. *Software: Practice and Experience*, 39(10):869–889, 2009.
- [30] H. Sozer, M. Tekkalmaz, and I. Korpeoglu. A peer-to-peer file search and download protocol for wireless ad hoc networks. *Computer Communications*, 32(1):41–50, 2009.
- [31] B. Tekinerdogan, H. Sozer, and M. Aksit. Software architecture reliability analysis using failure scenarios. *Journal of Systems and Software*, 81(4):558–575, 2008.
- [32] M. Tekkalmaz, H. Sozer, and I. Korpeoglu. Distributed construction and maintenance of bandwidth and energy efficient bluetooth scatternets. *IEEE Transactions on Parallel and Distributed Systems*, 17(9):963–974, 2006.

Book Chapters

- [1] B. Tekinerdogan and H. Sozer. An architecture viewpoint for modeling dynamically configurable software systems. In I. Mistrik, N. Ali, R. Kazman, J. Grundy, and B. Schmerl, editors, *Managing Trade-offs in Adaptable Software Architectures*, pages 79–97. Elsevier, Amsterdam, The Netherlands, 2016.
- [2] H. Sozer, B. Tekinerdogan, and M. Aksit. Software architecture design for local recovery. In R. Mathijssen, editor, *Trader-Reliability of High-Volume Consumer Products*, pages 139–150. Embedded Systems Institute, Eindhoven, The Netherlands, 2009.
- [3] H. Sozer, B. Tekinerdogan, and M. Aksit. Extending failure modes and effects analysis approach for reliability analysis at the software architecture level. In R. de Lemos, C. Gacek, and A. Romanovsky, editors, *Architecting Dependable Systems IV*, volume 4615 of *Lecture Notes in Computer Science*, pages 409–433. Springer, 2007.

Publications in Refereed Conferences and Workshops

- [1] H. Erol and H. Sozer. Test prioritization based on the coverage of recently modified source code: An industrial case study. In *Proceedings of the 36th IFIP International Conference on Testing Software and Systems*, pages 1–6, London, UK, 2024.
- [2] E. Ersoy, S. Bagriyanik, and H. Sozer. On the accuracy of effort estimations based on COSMIC functional size measurement: A case study. In *Proceedings of the 18th ACM/IEEE International Symposium on Empirical Software Engineering and Measurement*, pages 528–537, Barcelona, Spain, 2024.
- [3] H. Sozer. Towards a unified approach for software architecture recovery. In *Proceedings of the IEEE 48th Annual Computers, Software, and Applications Conference*, pages 1322–1323, Osaka, Japan, 2024.
- [4] H. Sozer. Call graph delta analysis and security vulnerability assessment with static analysis. In *Proceedings of the IEEE 48th Annual Computers, Software, and Applications Conference*, pages 2417–2422, Osaka, Japan, 2024.
- [5] M. Altinisik, H. Sozer, and G. Gursun. Software architecture recovery from multiple dependency models. In *Proceedings of the 39th ACM/SIGAPP Symposium on Applied Computing*, pages 1185–1192, Avila, Spain, 2024.
- [6] Ozge Akat and Hasan Sozer. Automated testing of systems of systems. In *Proceedings of the 35th IFIP International Conference on Testing Software and Systems*, pages 73–79, Bergamo, Italy, 2023.
- [7] H. Yapici and H. Sozer. Coevolution index: A metric for tracking evolutionary coupling. In *Proceedings of the IEEE 47th Annual Computers, Software, and Applications Conference*, pages 1582–1587, Torino, Italy, 2023.
- [8] T. Cingil and H. Sozer. Black-box test case selection by relating code changes with previously fixed defects. In *Proceedings of the International Conference on Evaluation and Assessment in Software Engineering*, pages 30–39, Göteborg, Sweden, 2022.
- [9] O.O. Ozener and H. Sozer. Summary of an effective formulation of the multi-criteria test suite minimization problem. In *Proceedings of the 15th IEEE Conference on Software Testing, Verification and Validation*, page 459, Virtual Event, 2022.
- [10] M. Elyasi, M.E. Simitcioglu, A. Saydemir, A. Ekici, and H. Sozer. HYGAR: A hybrid genetic algorithm for software architecture recovery. In *Proceedings of the 37th ACM Symposium on Applied Computing*, pages 1417–1424, Virtual Event, 2022.
- [11] U. Kanoglu, C. Dolas, and H. Sozer. On the use of machine learning for predicting defect fix time violations. In *Proceedings of the 17th International Conference on Evaluation of Novel Approaches to Software Engineering*, pages 119–127, Virtual Event, 2022.

- [12] E. Ersoy and H. Sozer. Effort estimation for architectural refactoring of data tier software. In *Proceedings of the 19th IEEE International Conference on Software Architecture*, pages 80–89, Virtual Event, 2022.
- [13] U. Yuksel and H. Sozer. Dynamic filtering and prioritization of static code analysis alerts. In *Proceedings of the 32nd International Symposium on Software Reliability Engineering Workshops*, pages 294–295, Virtual Event, Wuhan, China, 2021.
- [14] O. Sedefoglu and H. Sozer. Cost minimization for deploying serverless functions. In *Proceedings of the 36th ACM Symposium on Applied Computing*, pages 83–85, Virtual Event, Republic of Korea, 2021.
- [15] S. Dirim and H. Sozer. Prioritization of test cases with varying test costs and fault severities for certification testing. In *Proceedings of the 15th Workshop on Testing: Academic and Industrial Conference – Practice and Research Techniques*, pages 386–391, Porto, Portugal, 2020.
- [16] M. Astekin, S. Ozcan, and H. Sozer. Incremental analysis of large-scale system logs for anomaly detection. In *Proceedings of the IEEE International Conference on Big Data*, pages 2119–2127, Los Angeles, CA, USA, 2019.
- [17] H. Sozer. Evaluating the effectiveness of multi-level greedy modularity clustering for software architecture recovery. In *Proceedings of the 13th European Conference on Software Architecture*, pages 71–87, Paris, France, 2019.
- [18] M. Astekin, H. Zengin, and H. Sozer. Evaluation of distributed machine learning algorithms for anomaly detection from large-scale system logs: A case study. In *Proceedings of the IEEE International Conference on Big Data*, pages 2071–2077, Seattle, WA, USA, 2018.
- [19] H. Sozer, O. Gurler, and O. Yilmaz. Towards a testing framework with visual feedback for actor-based systems. In *Proceedings of the 18th IEEE International Conference on Software Quality, Reliability and Security*, pages 438–445, Lisbon, Portugal, 2018.
- [20] A. Kirkici, C. Sahin Gebizli, and H. Sozer. Risk-driven model-based testing of washing machine software: An industrial case study. In *Proceedings of the 13th Workshop on Testing: Academic and Industrial Conference – Practice and Research Techniques*, pages 398–403, Vasteras, Sweden, 2018.
- [21] M. Altinisik, E. Ersoy, and H. Sozer. Evaluating software architecture erosion for PL/SQL programs. In *Proceedings of the 4th Workshop on Software Architecture Erosion and Architectural Consistency*, pages 159–165, Canterbury, United Kingdom, 2017.
- [22] B. Ergun, C. Sahin Gebizli, and H. Sozer. FORMAT: A tool for adapting test models based on feature models. In *Proceedings of the 9th IEEE International Workshop on Software Test Automation*, pages 66–71, Turin, Italy, 2017.
- [23] K. Incki, I. Ari, and H. Sozer. Runtime verification of IoT systems using complex event processing. In *Proceedings of the 14th IEEE International Conference on Networking, Sensing and Control*, pages 625–630, Calabria, Italy, 2017.
- [24] I. Yildirim and H. Sozer. Automated extraction of feature models from android based portable devices. In *Proceedings of the 2017 IEEE International Workshop on Software Engineering and Knowledge Management*, pages 441–448, Prague, Czech Republic, 2017.
- [25] Y. Kilic and H. Sozer. Generating runtime verification specifications based on static code analysis alerts. In *Proceedings of the 32nd ACM Symposium on Applied Computing*, pages 1342–1347, Marrakech, Morocco, 2017.
- [26] C. Sahin Gebizli and H. Sozer. Impact of education and experience level on the effectiveness of exploratory testing: An industrial case study. In *Proceedings of the 12th Workshop on Testing: Academic and Industrial Conference – Practice and Research Techniques*, pages 23–28, Tokyo, Japan, 2017.

- [27] E. Ersoy, K. Kaya, M. Altinisik, and H. Sozer. Using hypergraph clustering for software architecture reconstruction of data-tier software. In *Proceedings of the 10th European Conference on Software Architecture*, pages 326–333, Copenhagen, Denmark, 2016.
- [28] E. Ersoy and H. Sozer. Extending static code analysis with application-specific rules by analyzing runtime execution traces. In *Proceedings of the 31st International Symposium on Computer and Information Sciences*, pages 30–38, Krakow, Poland, 2016.
- [29] C. Sahin Gebizli and H. Sozer. Model-based software product line testing by coupling feature models with hierarchical markov chain usage models. In *Proceedings of the 6th IEEE International Workshop on Model-Based Verification and Validation*, pages 278–283, Vienna, Austria, 2016.
- [30] T. Ayav and H. Sozer. Moving switching functions to continuous domain. In *Proceedings of the 6th IEEE International Workshop on Model-Based Verification and Validation*, pages 265–270, Vienna, Austria, 2016.
- [31] C. Sahin Gebizli, H. Sozer, and A.O. Ercan. Successive refinement of models for model-based testing to increase system test effectiveness. In *Proceedings of the 11th Workshop on Testing: Academic and Industrial Conference – Practice and Research Techniques*, pages 263–268, Chicago, IL, USA, 2016.
- [32] C. Sahin Gebizli, D. Metin, and H. Sozer. Combining model-based and risk-based testing for effective test case generation. In *Proceedings of the 10th Workshop on Testing: Academic and Industrial Conference – Practice and Research Techniques*, pages 1–4, Graz, Austria, 2015.
- [33] M. Altinisik and H. Sozer. Automated procedure clustering for reverse engineering PL/SQL programs. In *Proceedings of the 31st ACM Symposium on Applied Computing*, pages 1440–1445, Pisa, Italy, 2016.
- [34] F. Ozturk, E. Sarili, H. Sozer, and B. Aktemur. Effort estimation for architectural refactoring to introduce module isolation. In *Proceedings of the 8th European Conference on Software Architecture*, pages 300–307, Vienna, Austria, 2014.
- [35] C. Sahin Gebizli and H. Sozer. Improving models for model-based testing based on exploratory testing. In *Proceedings of the 6th IEEE International Workshop on Software Test Automation*, pages 656–661, Vasteras, Sweden, 2014.
- [36] U. Yuksel, H. Sozer, and M. Sensoy. Trust-based fusion of classifiers for static code analysis. In *Proceedings of the 17th International Conference on Information Fusion*, pages 0–0, Salamanca, Spain, 2014.
- [37] F. Koca, H. Sozer, and R. Abreu. Spectrum-based fault localization for diagnosing concurrency faults. In *Proceedings of the 25th International Conference on Testing Software and Systems*, pages 239–254, Istanbul, Turkey, 2013.
- [38] H. Sozer, S. Nouta, A. Wombacher, and P. Perona. DAPNA: An architectural framework for data processing networks. In *Proceedings of the 28th International Symposium on Computer and Information Sciences*, pages 221–229, Paris, France, 2013.
- [39] U. Yuksel and H. Sozer. Automated classification of static code analysis tool alerts: A case study. In *Proceedings of the 29th IEEE International Conference on Software Maintenance*, pages 532–535, Eindhoven, The Netherlands, 2013.
- [40] S. Ciraci, H. Sozer, and B. Tekinerdogan. A run-time verification framework for smart grid applications implemented on simulation frameworks. In *Proceedings of the 2nd International Workshop on Software Engineering Challenges for the Smart Grid*, pages 1–8, San Francisco, CA, USA, 2013.
- [41] K. Gulcu, H. Sozer, and B. Aktemur. FAS: Introducing a service for avoiding faults in composite services. In *Proceedings of the 4th International Workshop on Software Engineering for Resilient Systems*, pages 106–120, Pisa, Italy, 2012.

- [42] M. Astekin and H. Sozer. Utilizing clone detection for domain analysis of simulation systems. In *Proceedings of the 10th Working IEEE/IFIP Conference on Software Architecture*, pages 287–291, Helsinki, Finland, 2012.
- [43] B. Tekinerdogan and H. Sozer. Variability viewpoint for introducing variability in software architecture viewpoints. In *Proceedings of the 2nd International Workshop on Variability in Software Architecture*, pages 163–166, Helsinki, Finland, 2012.
- [44] S. Ciraci, H. Sozer, and B. Tekinerdogan. An approach for detecting inconsistencies between behavioral models of the software architecture and the code. In *Proceedings of the 36th IEEE International Conference on Computer Software and Applications*, pages 257–266, Izmir, Turkey, 2012.
- [45] K. Incki, I. Ari, and H. Sozer. A survey of software testing in the cloud. In *Proceedings of the 6th IEEE International Conference on Software Security and Reliability*, pages 18–24, Washington, D.C., USA, 2012.
- [46] A. Yildiz, B. Aktemur, and H. Sozer. Rumadai: A plug-in to record and replay client-side events of web sites with dynamic content. In *Proceedings of the 2nd Workshop on Developing Tools as Plug-ins*, pages 88–89, Zurich, Switzerland, 2012.
- [47] H. Sozer, C. Hofmann, B. Tekinerdogan, and M. Aksit. Runtime verification of component-based embedded systems. In *Proceedings of the 26th International Symposium on Computer and Information Sciences*, pages 471–477, London, UK, 2011.
- [48] B. Tekinerdogan and H. Sozer. Defining architectural viewpoints for quality concerns. In *Proceedings of the 5th European Conference on Software Architecture*, pages 26–34, Essen, Germany, 2011.
- [49] S. Ciraci, H. Sozer, M. Aksit, and W. Havinga. Guiding architects in selecting architectural evolution alternatives. In *Proceedings of the 5th European Conference on Software Architecture*, pages 252–260, Essen, Germany, 2011.
- [50] S. Ciraci, H. Sozer, M. Aksit, and W. Havinga. Execution constraint verification of exception handling on uml sequence diagrams. In *Proceedings of the 5th IEEE International Conference on Secure Software Integration and Reliability Improvement*, pages 31–40, Jeju Island, Korea, 2011.
- [51] A. de Roo, H. Sozer, and M. Aksit. Runtime verification of domain-specific models of physical characteristics in control software. In *Proceedings of the 5th IEEE International Conference on Secure Software Integration and Reliability Improvement*, pages 41–50, Jeju Island, Korea, 2011.
- [52] K. Hatun, C. Bockisch, H. Sozer, and M. Aksit. A feature model and development approach for schedulers. In *Proceedings of the 1st Workshop on Modularity in Systems Software*, pages 1–5, Porto de Galinhas, Brazil, 2011.
- [53] H. Sozer, R. Abreu, M. Aksit, and A. J.C. van Gemund. Increasing system availability with local recovery based on fault localization. In *Proceedings of the 10th International Conference on Quality Software*, Zhangjiajie, China, 2010.
- [54] A. de Roo, H. Sozer, and M. Aksit. An architectural style for optimizing system qualities in adaptive embedded systems using multi-objective optimization. In *Proceedings of the 8th Working IEEE/IFIP Conference on Software Architecture*, pages 349–352, Cambridge, UK, 2009.
- [55] H. Boudali and H. Sozer and M. Stoelinga. Architectural availability analysis of software decomposition for local recovery. In *Proceedings of the 3rd IEEE International Conference on Secure Software Integration and Reliability Improvement*, pages 14–22, Shanghai, China, 2009.
- [56] H. Sozer and B. Tekinerdogan. Introducing recovery style for modeling and analyzing system recovery. In *Proceedings of the 7th Working IEEE/IFIP Conference on Software Architecture*, pages 167–176, Vancouver, Canada, 2008.

- [57] H. Sozer, C. Hofmann, B. Tekinerdogan, and M. Aksit. Detecting mode inconsistencies in component-based embedded software. In *Proceedings of the Workshop on Architecting Dependable Systems, International Conference on Dependable Systems*, Edinburgh, UK, 2007.
- [58] B. Tekinerdogan, H. Sozer, and M. Aksit. Software architecture reliability analysis using failure scenarios. In *Proceedings of the 7th Working IEEE/IFIP Conference on Software Architecture*, pages 203–204, Pittsburgh, US, 2005.
- [59] M. Tekkalmaz, H. Sozer, and I. Korpeoglu. Distributed construction and maintenance of bandwidth-efficient bluetooth scatternets. In *Proceedings of the IEEE International Conference on Communications*, pages 3223–3229, Seoul, South Korea, 2005.
- [60] H. Sozer, M. Tekkalmaz, and I. Korpeoglu. A peer-to-peer file sharing system for wireless ad-hoc networks. In *Proceedings of the Third Annual Mediterranean Ad Hoc Networking Workshop*, Bodrum, Turkey, 2004.

Publications in National Conferences

- [1] M.A. Akar, K. Akgözlüoğlu, V. Bayrı, and H. Sözer. On the impact of common external package dependencies on software modularization. In *Proceedings of the 10th International Conference on Computer Science and Engineering*, pages 1176–1180, Istanbul, Turkey, 2025. (best paper award).
- [2] M.A. Akar, K. Akgözlüoğlu, V. Bayrı, and H. Sözer. FASTER: Function-as-a-service triggering for efficiency and responsiveness. In *Proceedings of the 10th International Conference on Computer Science and Engineering*, pages 1316–1320, Istanbul, Turkey, 2025.
- [3] U. Kanoglu, O.K. Yildiz, H. Sozer, and O.Y. Yildiz. CAGE: A tool for code assessment and grading. In *Proceedings of the 9th International Conference on Computer Science and Engineering*, pages 1070–1075, Antalya, Turkey, 2024.
- [4] A. Elakas, O. Tarlan, I. Safak, K. Kalkan, and H. Sozer. Towards test automation for certification tests in the banking domain. In *Proceedings of the 8th International Conference on Computer Science and Engineering*, pages 364–369, Burdur, Turkey, 2023.
- [5] A. Saydemir, E. Simitcioglu, and H. Sozer. On the use of evolutionary coupling for software architecture recovery. In *Proceedings of the 15th Turkish National Software Engineering Symposium*, pages 1–11, Virtual Event, Izmir, Turkey, 2021. (best paper award).
- [6] E. Ersoy and H. Sozer. Data model extension impact analysis. In *Proceedings of the 15th Turkish National Software Engineering Symposium*, pages 1–11, Virtual Event, Izmir, Turkey, 2021.
- [7] H. Sozer, O. Gurler, and O. Yilmaz. Aktör tabanlı sistemler için test kapsama kriterleri. In *Proceedings of the 12th Turkish National Software Engineering Symposium*, pages 1–11, Istanbul, Turkey, 2018.
- [8] O.F. Erdil, I. Can, and H. Sozer. Test kahini olarak görüntü karşılaştırma algoritmalarının değerlendirilmesi. In *Proceedings of the 11th Turkish National Software Engineering Symposium*, pages 101–113, Alanya, Turkey, 2017.
- [9] E. Ersoy, M. Altinisik, and H. Sozer. PL/SQL programları için veri tabanı bağımlılık analizi. In *Proceedings of the 11th Turkish National Software Engineering Symposium*, pages 114–125, Alanya, Turkey, 2017.
- [10] C. Sahin Gebizli, D. Metin, and H. Sozer. Statik ve dinamik analizler ile hesaplanan risklere dayalı olarak test modellerinin iyileştirilmesi. In *Proceedings of the 9th Turkish National Software Engineering Symposium*, pages 283–293, Izmir, Turkey, 2015. (best paper award).
- [11] U. Ozkan and H. Sozer. Web uygulamaları için model bazlı test süreci otomasyonu. In *Proceedings of the 9th Turkish National Software Engineering Symposium*, pages 101–112, Izmir, Turkey, 2015.

[12] D. Kurt and H. Sozer. Geçmişe dönük hata tespit oranlarının zamanla değişen etkisine göre regresyon testlerinin Önceliklendirilmesi. In *Proceedings of the 8th Turkish National Software Engineering Symposium*, pages 281–292, Guzelyurt, Northern Cyprus, 2014.

[13] I. Ari, E. Olmezogullari, and H. Sozer. Application of combinatorial testing techniques in complex event processing engines. In *Proceedings of the 20th Signal Processing and Communications Applications Conference*, pages 1–4, Mugla, Turkey, 2012.

Theses

[1] H. Sozer. *Architecting Fault-Tolerant Software Systems*. PhD thesis, University of Twente, Enschede, The Netherlands, January 2009.

[2] H. Sozer. A peer-to-peer file sharing system for wireless ad-hoc networks. Master's thesis, Bilkent University, Ankara, Turkey, August 2004.

Patents

TR 2022 013118 B, Turk Patent 2024, *Modüler Yazılım Mimarisinin Geri Kazanımını Sağlamak için bir Yöntem*, Ozyegin University

US 12493461 B2, United States Patent 2025, *Method for Providing Recovery of Modular Software Architecture*, Ozyegin University

Teaching

Courses Taught

Undergraduate	Software Engineering Computer Programming Data Structures and Algorithms
Graduate	Agile Software Development Software Testing and Analysis Advanced Software Engineering Design of Software Architectures Software Product Line Engineering

Supervised Ph.D. thesis

- 2022 Ersin Ersoy, *Automated Maintenance Support for Data-Tier Software*, Ozyegin University, İstanbul, Türkiye
- 2019 Merve Astekin, *Scalable Analysis of Large-Scale System Logs for Anomaly Detection*, Ozyegin University, İstanbul, Türkiye
- 2017 Ceren Şahin Gebizli, *Automated Refinement of Models for Model-Based Testing*, Ozyegin University, İstanbul, Türkiye
- 2012 Arjan de Roo, *Managing Software Complexity of Adaptive Systems*, University of Twente, Enschede, The Netherlands, co-supervised with Dr. Lodewijk Bergmans and Dr. Mehmet Akşit

Supervised M.Sc. thesis

- 2025 Abdülmecit Şahin, *Automated Identification and Refactoring of Code Clones in Test Scripts for Eliminating Duplication*, Ozyegin University, İstanbul, Türkiye

- 2025 Ömer Özdemir, *A Machine Learning Approach for Failure Prediction in Continuous Integration*, Ozyegin University, İstanbul, Türkiye, co-supervised with Dr. Reyhan Aydoğan
- 2025 Burak Öyke, *Modularization of Software Libraries*, Ozyegin University, İstanbul, Türkiye
- 2024 Özge Akat, *Automated Testing of Systems of Systems*, Ozyegin University, İstanbul, Türkiye
- 2023 Hüseyin Yapıcı, *Coevolution Index: A Metric for Tracking Evolutionary Coupling*, Ozyegin University, İstanbul, Türkiye
- 2022 Tutku Çingil, *Black-box Test Case Selection by Relating Code Changes with Previously Fixed Defects*, Ozyegin University, İstanbul, Türkiye
- 2021 Özgür Sedefoğlu, *Cost Minimization In Function-As-A-Service Computing*, Ozyegin University, İstanbul, Türkiye
- 2021 Şahin Dirim, *Prioritization and Parallel Execution of Test Cases for Certification Testing*, Ozyegin University, İstanbul, Türkiye
- 2021 Mustafa Gökçeoğlu, *Automated Defect Prioritization based on Defects Resolved at Various Project Phases*, Ozyegin University, İstanbul, Türkiye
- 2019 Ahmet Esat Genç, *ADVISOR: An Adaptive Framework for Test Oracle Automation of Visual Output Systems*, Ozyegin University, İstanbul, Türkiye
- 2018 Abdulhadi Kırkıcı, *Risk-Driven Model-Based Testing*, Ozyegin University, İstanbul, Türkiye
- 2017 Burcu Özten Ergun, *Tool Support for Model Based Software Product Line Testing*, Ozyegin University, İstanbul, Türkiye
- 2017 Yunus Kılıç, *Generating Runtime Verification Specifications Based on Static Code Analysis Alerts*, Ozyegin University, İstanbul, Türkiye
- 2016 Ersin Ersoy, *Extending Static Analysis with Application-Specific Rules by Analyzing Runtime Execution Traces*, Ozyegin University, İstanbul, Türkiye
- 2016 Metin Altınışik, *Automated Procedure Clustering for Reverse Engineering PL/SQL Programs*, Ozyegin University, İstanbul, Türkiye, co-supervised with Dr. Gonca Gürsun
- 2015 Gün Karagöz, *Reproducing Field Failures based on Semi-formal Failure Scenario Descriptions*, Ozyegin University, İstanbul, Türkiye
- 2014 Arda Ahmet Ünsal, *Domain-Specific Adaptive Service Monitoring*, Ozyegin University, İstanbul, Türkiye, co-supervised with Dr. Tankut Barış Aktemur
- 2014 Ceren Şahin Gebizli, *Improving Models for Model-based Testing based on Exploratory Testing*, Ozyegin University, İstanbul, Türkiye
- 2013 Koray Gülcü, *Fault Masking as a Service*, Ozyegin University, İstanbul, Türkiye, co-supervised with Dr. Tankut Barış Aktemur
- 2012 Merve Astekin, *Code Clones in Simulation Software Systems*, İstanbul Technical University, İstanbul, Türkiye, co-supervised with Dr. Muhittin Gökmen
- 2011 Sander Nouta, *Data processing networks made easy*, University of Twente, Enschede, The Netherlands, co-supervised with Dr. Andreas Wombacher
- 2010 Ronald Peterson, *Testing real-time requirements for integrated systems*, University of Twente, Enschede, The Netherlands, co-supervised with Dr. Ander de Keijzer
- 2008 Wouter Roosenburg, *Design of a reasoning framework for simulation-based performance analysis*, University of Twente, Enschede, The Netherlands, co-supervised with Dr. Bedir Tekinerdoğan and Thales Nederland

Institutional Service

- 2025 – present **Quality Commission Member**, *University Quality Commission*.
Ozyegin University, İstanbul, Türkiye
- 2024 – present **Chair of the Faculty Evaluation Committee**, *Faculty Periodic Evaluation Committee*.
Ozyegin University, İstanbul, Türkiye
- 2019 – present **Department Head**, *Department of Computer Science*.
Ozyegin University, İstanbul, Türkiye
- 2018 – 2022 **Education Accreditation Coordinator**, *Department of Computer Science*.
Ozyegin University, İstanbul, Türkiye
- 2014 – 2019 **Teaching Assistant Coordinator**, *Department of Computer Science*.
Ozyegin University, İstanbul, Türkiye
- 2014 – 2017 **Senior Project Coordinator**, *Department of Computer Science*.
Ozyegin University, İstanbul, Türkiye
- 2009 – 2011 **Senior Project Coordinator**, *Department of Computer Science*.
University of Twente Enschede, The Netherlands

Academic and Professional Service

- 2026 UYMS'26 (Program co-chair)
- 2023 – 2025 Chair of IEEE Computer Society Türkiye Chapter
- 2025 EASE'25 (Sponsorship co-chair)
- 2023 ECSA'23 (Workshop co-chair)
- 2022 BAYOYO'22 Machine Learning Summer School (Organization co-chair)
- 2020 UYMS'20 Software Testing Track (Program co-chair)
- 2017 ECSA'17 (Publicity co-chair)
- PC membership ACM SAC'14-26 (Track on Software Engineering),
ICTSS'18-24, NEXTA'22-25, EASE'19-23,
FedCSIS'23-24, UYMS'09-22, UYMK'10-20, ECSA'16'23,
ACM SAC'14-15 (Track on Software Verification and Testing)
BigData'19, SNPD'18, WICSA'16, TAIC PART'17-20
- Reviewing ACM Transactions on Software Engineering and Methodology
Empirical Software Engineering
IEEE Transactions on Reliability
IEEE Transactions on Cloud Computing
Journal of Systems and Software
Software: Practice and Experience
Information and Software Technology
Software Testing, Verification, and Reliability
Turkish Journal of Electrical Engineering and Computer Sciences
International Journal of Software Engineering and Knowledge Engineering
Expert Systems With Applications
Journal of Computer Languages

Computer Communications
ACM Computing Reviews
IEEE Software
IET Software
Refereeing Audits of R&D Centers, The Ministry of Industry and Technology of Turkiye
National projects supported by the Directorate of Technology and Innovation Support
Programs, The Scientific and Technical Research Council of Turkiye (TUBITAK)

Awards and Distinctions

2025 **Best Paper Award.**
International Conference on Computer Science and Engineering (UBMK 2025)
2024,2023,2021 **Best Reviewer Award.**
Journal of Systems and Software
2021 **Best Paper Award.**
Turkish National Software Engineering Symposium (UYMS 2021)
2018 **Distinguished Referee.**
Journal of Software: Practice and Experience
2015 **Best Paper Award.**
Turkish National Software Engineering Symposium (UYMS 2015)
2014 **National Young Researcher Career Award.**
The Scientific and Technical Research Council of Turkiye (TUBITAK)
2002 – 2004 **High Honour Success Scholarship.**
M.Sc. studies at Bilkent University, Ankara, Turkiye
2000 – 2002 **High Honour Success Scholarship.**
B.Sc. studies at Bilkent University, Ankara, Turkiye

Membership

IEEE Member
IEEE Computer Society Member
ACM Member

Languages

native **Turkish**
fluent **English**
intermediate **Dutch**