GIZEM KAYAR CEYLAN

New York University Computer Science Department
Courant Institute of Mathematical Sciences
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CURRENT APPOINTMENTS

January 2025-con. Clinical Associate Professor of Computer Science, NYU

- https://wp.nyu.edu/courantinstituteofmathematicalsciences-gizemk/

PRIOR POSITIONS AND APPOINTMENTS

2022-2024 Clinical Assistant Professor of Computer Science, NYU

2020-2021 Asst. Professor of Computer Science, Muğla Sıtkı Kocman University Computer Engineering Department

- Technical Lead at MSKU Digital Game Based Learning and Serious Games Lab
- Director at MSKU Digital Game Technologies Graduate Program with Thesis

2015-2019 Asst. Professor of Computer Science, TEDU Computer Engineering Department

- Director at Interactive Computing Technologies Graduate Program with Thesis
- Technical Director at TEDU SEM-TOGED Game Development Certificate Program

2014-2015 Post Doctoral Researcher at Geonumerics Group, MIT

2010-2014 Research Assistant of Computer Grapics Group, Computer Science Department, Albert Ludwig University of Freiburg

2010 Student Assistant of Computer Grapics Group, Computer Science Department, Albert Ludwig University of Freiburg

EDUCATION

2010-2014	PhD. in Computer Science, Albert Ludwig University of Freiburg, Germany
2007-2010	MSc. in Computer Science, Albert Ludwig University of Freiburg, Germany
	Honor degree according to academic grading system in Germany
2003-2007	BSc. in Computer Engineering, Atilim University, Ankara Turkey
	High Honor Degree and 2nd Rank Among 160 graduates of Faculty of Engineering
2000-2003	Mugla Science High School

REFEREED PUBLICATIONS

1. Chen, Y., Liu, Y. & Kayar-Ceylan, G. CSG-based ML-supported 3D translation of sketches into game assets for game designers. *Vis Comput* (2025). Volume https://doi.org/10.1007/s00371-024-03758-9

2. X. Liu, G. Kayar, K. Perlin (2024). A GPU-based Hydrodynamic Simulator with Boid Interactions, Parallel Computing, Volume 119, 2024, 103062, ISSN 0167-8191, https://doi.org/10.1016/j.parco.2023.103062.

3. G. Kayar, (2023). Colour-Field Based Particle Categorization for Residual Stress Detection and Reduction in Solid SPH Simulations. In Proceedings of the 18th International Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications - Volume 1: GRAPP, ISBN 978-989-758-634-7, ISSN 2184-4321, pages 237-241.

4. Yazici Y, S., & Kayar, G. (2023). Developing a Mobile Augmented Reality Application for Destroyed HistoricalSites. Selçuk Turizm Ve Bilişim Araştırmaları Dergisi (4), 26-51.

5. Ş. Sefergil, B. Evcim, G. Kayar, Veterinary Anatomy Distance Education Through YouTube and Anatomical 3D Models During Pandemic COVID19 Period, International Congress on Biological and Health Sciences, 26-28 February 2021.

6. S.K. Cakmak, G. Kayar, 2020. Geo-Location Based Mobile Augmented Reality Application. Eurasiagraphics Conference on Virtual Worlds, 2020 [Poster].

7. G.Kayar, T. Sümer, F. Soytürk, G.E. Doruk, C. Çobanoğlu. Explore Music Data to Enhance Customer Satisfaction. ENTER2020 Conference, Surrey, UK. Jan. 08-10 2020.

8. E. Avcı, G. Kayar. The Technological Power of Mysticism: A New Approach to Management of Religious Destinations. Book Chapter at IGI-GLOBAL: Global Development of Religious Tourism, 2020.

9. G.Kayar, A. Tümay, H. Durmaz, T.V. Peker. Oyunlaştırma Tabanlı ve WEB Destekli Anatomi Platformu Geliştirilmesi (Gamification-Based WEB Supported Anatomy Platform Development). TURKMIA 2019, 15-16 November, 2019.

10. E. Avcı, G. Kayar, E. Karakaş, C. Çobanoğlu. The Potential Usage of Augmented Reality Applications in Tourist Guidance Education. Glostour 2019, Çanakkale, Turkey. 13-16 November 2019.

11. G.Kayar, T. Sümer, F. Soytürk, G.E. Doruk, C. Çobanoğlu. A Data Driven Playlist-Based Recommendation and Vote Box System Using Spotify Developer API (An Approach to Enhance Customer Experience Using Music Data). Global Conference on Business and Economics (GLOBE 2019), Technology/E-Business/Social Media track. Sept. 30-Oct. 03 2019, İstanbul, Turkey, ISSN: 2641-502X [Abstract].

12. G.Kayar, C. Çobanoğlu. How to Attract Young Generation to Museums Using the Idea of Gamification and an Augmented Reality Based Mobile Application. Global Conference on Business and Economics (GLOBE 2019), Technology/E-Business /Social Media track. Sept. 30-Oct. 03 2019, İstanbul, Turkey, ISSN: 2641-502X.

13. S.O. Yuksek, C. Çobanoğlu, S. Suwanti, G. Kayar. Gamification in Human Resources: Processes and Reflections in the Hospitality Industry. Global Conference on Business and Economics (GLOBE 2019), Technology/E-Business/Social Media track. Sept. 30-Oct. 03 2019, İstanbul, Turkey, ISSN: 2641-502X.

14. G. Kayar. Application of Serious Games for Assessing the Stages and Slowing Down the Progress of Common Neurodegenerative Diseases Seen in Elderly People. Eurasiagraphics, 16-18 November 2018, Gaziantep, Turkey [Abstract].

15. G. Kayar, An Approach To Develop A Motion-Sensitive, Locally Multiplayer-Hybrid (Multipid) 3d Video Game, Mugla Journal of Science and Technology, 5(1), 105-113, 2019.

16. G. Kayar, N. Akinci, E. Oswald, M. Teschner. Adaptive Surface Reconstruction for SPH Using 3-level Uniform Grids. WSCG, June 2013.

17. N. Akinci, A. Dippel, G. Kayar, M. Teschner. Screen Space Foam Rendering. WSCG, June 2013.

18. N. Akinci, G. Kayar, M. Teschner. Versatile Surface Tension and Adhesion for SPH Fluids. ACM Transactions on Graphics (Proc. SIGGRAPH Asia 2013), Nov. 2013.

19. N. Akinci, J. Cornelis, G. Kayar, M. Teschner. Coupling Elastic Solids with SPH Fluids. Journal of Computer Animation and Virtual Worlds (CAVW), vol. 24, no. 3-4, pp. 195-203, CASA 2013 Special Issue, 2013.

20. N. Akinci, M. Ihmsen, G. Kayar, B. Solenthaler, M. Teschner. Versatile Rigid-Fluid Coupling for Incompressible SPH. ACM Transactions on Graphics (Proc. SIGGRAPH 2012), vol. 31, no. 4, pp. 62:1-62:8, July 2012.

21. M. Ihmsen, N. Akinci, G. Kayar, M. Teschner. Unified Spray, Foam and Bubbles for Particle based Fluids. The Visual Computer , vol. 28, no. 6-8, pp. 669-677, 2012, doi: 10.1007/s00371- 012-0697-9

22. G. Kayar, M. Ihmsen, N. Akinci, M. Teschner. Parallel Surface Reconstruction for Particle based Fluids. Computer Graphics Forum (Presented at Eurographics 2013), vol. 31, no. 6, pp. 1797-1809, 2012, doi: 10.1111/j.1467-8659.2012.02096.x.

23. G. Kayar, N. Akinci, M. Ihmsen, M. Teschner. An Efficient Surface Reconstruction Pipeline for Particle-Based Fluids. Proc. VRIPHYS, Darmstadt, Germany, pp. 61-68, Dec. 6-7, 2012

24. M. Ihmsen, J. Bader, G. Kayar, M. Teschner. Animation of Air Bubbles with SPH. Int. Conf. on Computer Graphics Theory and Applications GRAPP 2011, pp. 225-234, March 5-7, 2011.

SUPERVISED MASTER / BACHELOR THESES AND PROJECTS ORDERED YEARLY

1. Nancy Sun. Digitalization and Gamification of Doctor Approved Cognitive Exercises for Dementia Patients. NYU Dean's Undergraduate Researh Fund Recipient, 2024.
2. Daniel Atlas, Philipp Liu. ML-Supported 3D Translation of Sketches with Constructive Solid Geometry in 3D Video Game Engines. NYU Dean's Undergraduate Researh Fund Recipient, 2023.
3. Tim Chen. Cataract Surgery Simulator. NYU Dean's Undergraduate Researh Fund Recipient, 2023.
4. Xi Liu. A molecular dynamics system to model biochemical interactions between self-propelled microbial agents and fluid molecules in aqueous environment. NYU Dean's Undergraduate Researh Fund Recipient, 2023.
5. Yinlong Dai. Developing a Physics Simulation for Omentectomy Surgery: Modeling the Interaction between Deformable Omentum and Rigid Organs. NYU Dean's Undergraduate Researh Fund Recipient, April 2023.
6. Jalen Zhang. Enhancing Performance on Diverse Platforms with Unity's Universal Render Pipeline: A Focus on Lightmaps. June 2023, Independent Study.
7. Oğuzhan Akdoğan, Alp Koral. A Gamification Tool for Dementia Patients Strictly Proven by Traditional Accepted Methodologies, June 2021, Bachelor's Thesis.
8. Yavuz Selim Abazaoğlu. Digital Museum Age Tool. May, 2020, Bachelor's Thesis.
9. Baran Budak, Cihanser Çalışkan, İsmail Mekan. Fluid Surface Reconstruction Performance Enhancement Examination. May, 2020, Bachelor's Thesis.
10. Büşra Kirpi, Barış Dalgıç, Gamze Kızıldağ, Berra Çolak. GBL Integrated Mobile Anatomy Platform. May, 2020, Bachelor's Thesis.

11. Oğuz Sert, Utku Süsoy, Barış Üçkardeş, Buğra Bozkurt. Tears Online: Blockchain Integrated Multiplayer Online Game. May, 2020, Bachelor's Thesis.
12. Arda Tümay, Hayri Durmaz. Anatomy Game Platform. May, 2019, Bachelor's Thesis.
13. Ahmet Efe Erkal, Batuhan Mert Karabulut, Batuhan Çiçek, Mehmet Can Ertüzün. Never Left Behind: the Team. May, 2019, Bachelor's Thesis.
14. Tolga Sümer, Furkan Soytürk. ShuffleMusic Box: An Application on Data Analysis of Spotify Developer API. May, 2019, Bachelor's Thesis.
15. Hilal Köktürk, Deniz Merve Gündüz, Ecem Erdolu, Nur Bengisu Kırkdeveli. Physio Mate. Physical Therapy Tool Development. May 2018, Bachelor's Thesis.
16. Kemal Çağlar Güler, Berk Cebeci. Open World Game Development with Integrated Virtual Reality and Motion Sensors. May 2017, Bachelor's Thesis.
17. Alexander Dippel. Surface Splatting für Dynamische SPH Animationen. March 2011, Bachelor Thesis
18. Edgar Oswald. Räumlich adaptive Gitter für SPH-Oberflächenrekonstruktionen. May 2012, Master's Thesis

TEACHING

- Computer Graphics
- Computer Systems Organization
- Numerical Computing
- Programming Languages
- Analytical Reasoning (Introduction to Discrete Maths)
- Game Programming (Unity Course)
- C Programming
- Introduction To Information Technologies
- Software Engineering
- Fundamentals of Programming I (Java Course)

- Physically Based Modeling and Simulation (Grad. course)
- Gamification and Simulation in Medicine (Grad. course)
- Simulation in Computer Graphics (Grad. course)

- Summer Practice I and II (Coordinator)

THESES

Efficient Surface Reconstruction for SPH Fluids. May 2014, PhD thesis.

Smooth Surface Reconstruction for SPH. August 2010, Master's thesis.

GRANTS

2025	NYU Student Activities Grant for Undergraduate Computer Graphics course – Spring 2025
2023	TÜBİTAK ARDEB 1005 National New Ideas and Products Research Funding Program with the project "3D Digital Bone Atlas" with Dr. Ceren Uguz Gencer, Dr. Ilkay Kosar et al., April 2023. $25K (Role: Advisor)
2021	KOSGEB Advanced Entrepreneurship Program, 2021 with the project "CosimO: Surgical Oncological Simulator and Gamification Tool". $40K (Role: PI)
2021	Gamification of Maths Modules for pre K-12 children. MSKU Scientific Research project. August 2021-August 2022, $4K (Role: Researcher)
2020	CosimO: Surgical Oncological Simulator and Gamification Tool, TÜBİTAK TEYDEB 1512 BIGG 220001, October 2020-September 2021, $30K (Role: PI)
2020	3D Anatomical Head Atlas Development for Medical Students, MSKU Scientific Research project, 20/110/03/2/4, September 2020-September 2021. $4K (Role: PI)
2020	Generation of 3D Anatomical Teaching Material for Equidae "Horse Skeleton" using Augmented Reality Technology, MSKU BAP 20/108/01/4. July 2020 - September 2021, $4K (Role: Researcher)
2019	Investigating Blockchain Applications in Multiplayer Online Games with a Sample Project: NeverLeftBehind: TheTeam. Supported by TEDU Undergraduate Research Fund (URF). February -August 2019. Supervised undergraduate students are Ahmet Efe Erkal, Mehmet Can Ertüzün, Batuhan Çiçek and Batuhan Mert Karabulut, $2K
2017	Open World Game Development with Integrated Virtual Reality and Motion Sensors. Supported by TEDU Undergraduate Research Fund (URF). January-June 2017. With co-supervisor Selen Pehlivan and supervised undergraduate students Kemal Çağlar Güler and Berk Cebeci. , $2K

CONFERENCES, SEMINARS, COURSES, PANEL DISCUSSIONS AND CONVERSATIONS ATTENDED AS INVITED SPEAKER OR PANELIST IN HER FIELD

2023	SummerSpringBoard Game Development Instructor at Duke University, NC
2019	Seminar, Physically Based Simulations and Serious Games, University of Malta
2018	Course, Introduction to Computer Science for High School Students, Summer Program by TEDU - SEM
2018	Conversation on Game Development Certificate Program in Turkey Radio Television Corporation (TRT) Ankara Radio Station-Gecenin İçinden Show
2017	Particle-Based Simulations and Their Role in Game Development. Eurasiagraphics Conference on Virtual and Interactive Realities
2017	Course, Introduction to Game Design for High School Students, Summer Program by TEDU – SEM
2016	Seminar, Computer Graphics in Games – TED Ankara College
2016	Albert Ludwigs University of Freiburg. Fundamental Topics in CG and Their Applications in Unity Game Engine
2016	Albert Ludwigs University of Freiburg. Advanced Topics in Particle-Based Simulations and Rendering

PROFESSIONAL SERVICES

ADVISORY BOARD

- USA National AP Computer Science A Advisory Board
- USA National AP Computer Science A Reader

EDITORIAL AND REFEREEING

- Referee and Computer Science Graphics Field Editor at Mugla Journal of Science and Technology
- Editor at TÜBİTAK Journal of Electrical Engineering Computer Sciences
- Referee at The Journal of Computer Animation and Virtual Worlds
- Referee at The Journal of Engineering Sciences and Design

CONFERENCE AND SEMINAR ORGANIZATION

- Steering Commitee Member and General Chair at Eurasisgraphics Conference on Computer Graphics, Computer Vision, Visual Computing, Digital Game Technologies, VR/AR (https://eurasiagraphics.org/)

MEMBERSHIP

- Turkey's Engineer Girls project run by LIMAK Foundation, Republic of Turkey Ministry of Family, Labour and Social Services, Republic of Turkey Ministry of National Education, and United Nations Development Programme (UNDP). To ask engineer: https://www.turkiyeninmuhendiskizlari.com/muhendisesor/?/muhendis/detay/id=47

PERSONAL

https://www.linkedin.com/in/gizem-kayar-a8b093a5/
http://orcid.org/0000-0002-7811-9357

Turkish – Native
English – Fluent in spoken and written
German – B1 middle level