Tolga K. Çapın
Department Chair
Computer Engineering Department,
TED University, 06420 Kolej / Ankara TURKEY
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Education

Ph.D. in Computer Science, *1998*
Swiss Federal Institute of Technology (EPFL)
Virtual Human Representation in Networked Virtual Environments
Advisor: Prof. Daniel Thalmann.

M.S. in Computer Engineering and Information Sciences *1993*
Bilkent University
Thesis: Parallel Processing For Progressive Refinement Radiosity
Advisor: Prof. Cevdet Aykanat.

B.S. in Computer Engineering and Information Sciences *1991*
Bilkent University

Research, Academic, and Industrial Experience

Department Chair, Assoc. Professor, *TED University* *2014-*

Assistant Professor, *Bilkent University* *2006-2014*

Research Manager, *Nokia Research Center, Irving, TX* *2003-2006*

- Supervised *Computer Graphics and Vision Group*, a research team of ten scientists / engineers, who were responsible for technical aspects of graphics / vision architectures on mobile phones.
- Responsibilities included:
  - *Exploration, identification, and prioritization of mobile graphics research topics, both within and beyond Nokia's current business scope. Topics include 2D/3D vector graphics for mobile GPUs, augmented reality, and camera-based user interfaces.*
  - *Defining and managing Nokia's graphics research portfolio, and funding allocation for research projects.*
  - *Playing key technical role in standardization bodies, and in networking with universities, research partners, and subcontractors.*
  - *Providing technical leadership for the team. Responsible for objective setting, performance review, career development and compensation planning of the research team.*

Principal Scientist, *Nokia Research Center, Irving, TX* *2001-2003*

- Responsibilities included:
  - *Nokia's Mobile Graphics Research Program Management. Played key*

role in defining Nokia's technology vision and strategy related to graphics. Maintained Nokia's technology maps related to graphics/vision.

- *Hands-on work and responsibility for implementation and analysis of mobile graphics architectures and implementations. Played a leading role in initiating open standards in mobile graphics – including SVG, J2ME 2D/3D Graphics, OpenVG, OpenGL ES.*
- *Contributed to Nokia's roadmap definition related to GPUs and software graphics engines, on Nokia's Series 60, Series 40, and Linux based products. Responsible for technology transfer of research results to product groups. Engines featured on most Nokia products in 2005-2006.*

Research Associate, *EPFL – Swiss Federal Institute of Technology* *1994-2000*

- Conducted research on networked virtual environments, virtual human animation, compression, and streaming. Played a key role in building a number of European Projects: SoNG, VIDAS, and FIVE – participated in building the project plan with other consortium members, project negotiations with EU officials, and executing the project. Played the Workpackage Manager Role, related to MPEG-4 SNHC compliant engine development, and face and body animation.

Consultant, *Bell Laboratories, Lucent Technologies* *1999*

- Provided consultancy on MPEG-4 SNHC compliant animation module for Lucent's virtual tennis application.

Awards & Honours

Best Paper Award, at Computer Graphics International Conference, 2013.

TÜBİTAK Project Coordinator Award, for project coordinator role in an EU FP7 ICT STREP Project, 2008.

Java Community Process Award for "outstanding contributions to J2ME (Mobile Java) standardization", 2004.

ISO/MPEG Award for "outstanding contributions to the MPEG-4 standard", 1999.

Other:

- **Nokia Quality Award** – semifinalist in Nokia-internal research competition; chosen to be in top 6 research projects performed in the company, 2004.
- **European Commission Success Stories**, for leadership role in MPEG-4 standardization, 1999.
- **Fulbright Scholarship** to pursue Ph.D. studies in the U.S. (not used, as I decided to pursue Ph.D. studies in Switzerland), 1993.
- **Higher Education Council of Turkey**, scholarship to pursue Ph.D. studies in the U.K. (not used, as I decided to pursue Ph.D. studies in Switzerland), 1993.
- **High honours List**, Bilkent University, 1987-1991.

Published Book

T. Çapın, I. Pandzic, N. Magnenat-Thalmann, D. Thalmann, *Avatars in Networked Virtual Environments*, John Wiley and Sons, 1999.

Journal Articles (SCI - SCI-Expanded)

Sami Arpa, Abdullah Bulbul, Tolga Çapın, *A Clustering-Based Method to Estimate Saliency in 3D Animated Meshes,* Computers and Graphics, Elsevier **Vol. 43**, 11-20 (2014).

Anni Sassi, Perttu Pöyhönen, Sini Jakonen, Sini Suomi, Tolga Çapın, Jukka Häkkinen, *Enhanced user performance in an image gallery application with a mobile autostereoscopic touch display,* Displays, Elsevier, **35(3),** 152-158, http://dx.doi.org/10.1016/j.displa.2014.05.003 (2014).

Zeynep Çipiloğlu, Abdullah Bülbül, Tolga Çapın, *A Framework for Applying the Principles of Depth Perception to Information Visualization,* ACM Transactions on Applied Perception, ACM Press **10(4), article no. 19.** DOI: 10.1145/2536764.2536766 (2013).

Ufuk Celikcan, Gokcen Cimen, E. Bengu Kevinc, Tolga Çapın, *Attention-Aware Disparity Control in interactive environments*, The Visual Computer Journal, Springer, **29(6-8)**, 685-694. DOI: 10.1007/s00371-013-0804-6. **(Best Paper Award)** (2013)

Can Telkenaroğlu, Tolga Çapın, *Dual-Finger 3D Interaction Techniques for Mobile Devices*, Journal of Personal and Ubiquitous Computing, Springer, **17(7),** 1551-1572. DOI: 10.1007/s00779-012-0594-2. (2013)

Gokcen Cimen, Hacer Ilhan, Tolga Çapın, Hasmet Gurcay, *Classification of human motion based on affective state descriptors*, Computer Animation and Virtual Worlds, Wiley, **24(3-4),** 355-363. DOI: 10.1002/cav.1509. (2013)

Sami Arpa, Abdullah Bulbul, Tolga Çapın, Bulent Ozguc, *Perceptual 3D rendering based on principles of analytical cubism*, Computers and Graphics, Elsevier, **36(8)**, 991-1004. DOI: http://dx.doi.org/10.1016/j.cag.2012.06.003. (2012)

Abdullah Bulbul, Tolga Çapın, Guillaume Lavoué, Marius Preda, *Assessing Visual Quality of 3-D Polygonal Models*, IEEE Signal Processing Magazine, IEEE Press, **28(6)**, 80-90. DOI: 10.1109/MSP.2011.942466. (2011)

Atanas Gotchev, Gozde Bozdagi Akar, Tolga Çapın, Dominik Strohmeier, Atanas Boev, *Three-Dimensional Media for Mobile Devices*, Journal of Proceedings of the IEEE, IEEE Press, **99(4),** 708-741. DOI:10.1109/JPROC.2010.2103290. (2011)

Cihan Halit, Tolga Çapın, *Multiscale Motion Saliency For Keyframe Extraction From Motion Capture Sequences,* Computer Animation and Virtual Worlds, Wiley, **22(1),** 3-14. DOI:10.1002/cav.380. (2011)

Abdullah Bülbül, Zeynep Çipiloğlu, Tolga Çapın, *A Perceptual Approach for Stereoscopic Rendering Optimization*, Computers and Graphics Journal, Elsevier, **34 (145-157)**. DOI:10.1016/j.cag.2009.11.004. (2010)

Abdullah Bülbül, Zeynep Çipiloğlu, Tolga Çapın, *A Color-Based Face Tracking Algorithm for Enhancing Interaction with Mobile Devices*, The Visual Computer Journal, Springer, **26(5)**, 311-323. DOI:10.1007/s00371-010-0419-0. (2010)

R. Aras, B. Başarankut, T. Çapın, ve B. Özgüç, *3D Hair Sketching for Real Time Dynamic & Key*

Frame Animations, The Visual Computer Journal, Springer, **24 (7-9),** 577-585. DOI:10.1007/s00371-008-0238-8. (2008)

T. Çapın, K. Pulli, ve T. Akenine-Möller, *State of the Art in Mobile Graphics Research,* IEEE Computer Graphics and Applications, IEEE Press, **28(4),** 74-84. DOI: 10.1109/MCG.2008.83. (2008)

A. Haro, K. Mori, T. Çapın, S. Wilkinson. *Mobile Camera-Based User Interaction*, Springer Lecture Notes in Computer Science, **3766,** 79-89. DOI:10.1007/11573425. (2005)

I. Pandzic, C. Babski, T. Çapın, W.S. Lee, N. Magnenat-Thalmann, S. R. Musse, L. Moccozet, H. Seo, D. Thalmann, *Simulating Virtual Humans in Networked Virtual Environments*, The Journal of Presence: Teleoperators and Virtual Environments, MIT Press, **10(6),** 632-646. DOI: 10.1162/105474601753272871. (2001)

T.K. Çapın, J. Esmerado, D. Thalmann, *A Dead-Reckoning Technique for Streaming Virtual Human Animation,* IEEE Transactions on Circuits and Systems for Video Technology, IEEE Press, **9(3)**, pp. 411-414. DOI: 10.1109/76.754769. (1999)

A. Guye-Vuillieme, T.K. Çapın, I.S. Pandzic, N. Magnenat Thalmann, D. Thalmann, *Non-verbal Communication Interface for Collaborative Virtual Environments* , The Virtual Reality Journal, Springer, **4(1)**, 49-59. DOI: 10.1007/BF01434994. (1999)

T. Molet, A. Aubel, T. Çapın, S. Carion, E. Lee, N. Magnenat Thalmann, H. Noser, I. Pandzic, G. Sannier, D. Thalmann, *Anyone for Tennis?* The Journal of Presence: Teleoperators and Virtual Environments, MIT Press, **8(2)**, 140-156. DOI: 10.1162/105474699566134. (1999)

T.K.Çapın, I.S.Pandzic, H.Noser, N.Magnenat Thalmann, D.Thalmann, *Virtual Human Representation and Communication in VLNET*, IEEE Computer Graphics and Applications, IEEE Press, **17(2),** 42-53. DOI: 10.1109/38.574680. (1997)

P. Doenges, T.K. Çapın., F. Lavagetto, J. Ostermann, I.S. Pandzic, E. Petajan, *MPEG-4: Audio/video and synthetic graphics/audio for mixed media,* Image Communications Journal, Elsevier, **5(4)**, 433-463. DOI: doi:10.1016/S0923-5965(97)00007-6. (1997)

I. Pandzic, N. Magnenat Thalmann, T. Çapın, D.Thalmann, *Virtual Life Network: A Body-Centered Networked Virtual Environment*, The Journal of Presence: Teleoperators and Virtual Environments, MIT Press, **6(6)**, 676-686. (1997)

I.Pandzic, T.Çapın, E.Lee, N.Magnenat Thalmann, D.Thalmann, *A Flexible Architecture for Virtual Humans in Networked Collaborative Virtual Environments,* Computer Graphics Forum, **16(3)**, 177-188. DOI: 10.1111/1467-8659.16.3conferenceissue.19. (1997)

D. Thalmann, C. Babski, T. Çapın, N. Magnenat Thalmann, I. Pandzic, *Sharing VLNET worlds on the Web*, Journal of Computer Networks and ISDN Systems, Elsevier, **29(14),** 1601-1610. DOI:10.1016/S0169-7552(97)00075-5. (1997)

Aykanat, C; Çapın, TK; Özgüç, B., *A Parallel Progressive Radiosity Algorithm Based on Patch Data Circulation*, Computers and Graphics, Elsevier, **20 (2)**, 307-324. DOI:10.1016/0097-8493(95)00132-8. (1996)

Boulic, T. Çapın, Z. Huang, L. Moccozet, T. Molet, P. Kalra, B. Lintermann, N. Magnenat-Thalmann, I. Pandzic, K. Saar, A. Schmitt, J. Shen, D. Thalmann, *The HUMANOID Environment for Interactive Animation of Multiple Deformable Human Characters*, Computer Graphics Forum, **14(3),** 337-348. DOI: 10.1111/j.1467-8659.1995.cgf143_0337.x. (1995)

Book Chapters

Adil Yalçın, Tolga Çapın, *A Generic Multi-View Rendering Engine Design*, Game Engine Gems 2, AK Peters (2011).

Yeliz Yiğit, Tolga Çapın, *3D Thumbnails for 3D Videos with Depth*, Depth Map and 3D Imaging Applications: Algorithms and Technologies, Information Science Reference (2011).

T. Çapın, A. Haro, *Mobile Camera Based User Interaction*, Handbook of Research on User Interface Design and Evaluation for Mobile Technology, Information Science Reference, 2008.

S. Garchery, R. Boulic, T. Çapın, P. Kalra, *Standards for Virtual Humans*, Virtual Human Handbook, John Wiley and Sons, 2004.

E. Jang, T. Çapın, J. Ostermann, *Visual SNHC Tools*, The MPEG-4 Book, Prentice Hall, 2002.

T.K.Çapın, I.S.Pandzic, N.Magnenat Thalmann, D.Thalmann, *Realistic Avatars and Autonomous Virtual Humans in VLNET*, Virtual Worlds in the Internet (R.Earnshaw and J. Vince, eds), IEEE Computer Society Press, 1998.

Selected Conference Papers

Zümra Kavafoğlu, Hacer İlhan, Ersan Kavafoğlu, Haşmet Gürçay, Tolga Çapın, Simple Vertical Human Climbing Control With End Effector State Machines, Eurasia Graphics Conference (2014).

Sami Arpa, Abdullah Bulbul, Tolga Çapın, A Decision Theoretic Approach to Motion Saliency in Computer Animations, *Springer Lecture Notes in Computer Science,* Special Issue on Motion in Games (2011).

R. Bertan Gündoğdu, Yeliz Yiğit, Tolga Çapın, 3D Thumbnails for Mobile Media Browser Interface with Autostereoscopic Displays, *Springer Lecture Notes in Computer Science*, Special Issue on IEEE Multimedia Modeling 2010. 626-636. DOI:10.1007/978-3-642-11301-7

Z. Çipiloğlu, A. Bülbül, T. Çapın, A Framework for Enhancing Depth Perception in Computer Graphics*, Proceedings of the ACM Symposium on Applied Perception in Graphics and Visualization, APGV 2010*, Los Angeles, CA, USA, ACM Press, July 2010.

A. Bülbül, Ç. Koca, T. Çapın, U. Güdükbay, Saliency for Animated Meshes with Material Properties, *Proceedings of the ACM Symposium on Applied Perception in Graphics and Visualization, APGV 2010,* Los Angeles, CA, USA, ACM Press, July 2010.

D. Ceylan, T. Çapın, A Multi-Touch Interface for 3D Mesh Animation, *Proceedings of Computer Animation and Social Agents Conference, CASA 2010,* Saint Malo, France, June 2010.

M. A. Yalcin, T. K. Çapın, Editing Heightfield Using History Management and 3D Widgets, *Proc. ISCIS 2009*, IEEE Press, (2009). DOI=10.1109/ISCIS.2009.5291853.

A. Bülbül, Z. Çipiloğlu, T. Çapın, A Face Tracking Algorithm for User Interaction in Mobile Devices, *Proc. Cyberworlds 2009*, IEEE Press, (2009). DOI: 10.1109/CW.2009.9.

E. Algan, M. Kabak, B. Özgüç, T. Çapın, Simulation of Water Drops on a Surface, *Proc. 3DTV Conference*, Istanbul, IEEE Press, (2008). DOI: 10.1109/3DTV.2008.4547883.

E. Bulut, T. Çapın, Key Frame Extraction from Motion Capture Data by Curve Saliency, *Proc. CASA 2007 – Computer Animation and Social Agents*, Hasselt (2007).

M. Kandemir, T. Çapın, B. Özgüç, A Framework for Real-Time Animation of Liquid-Rigid Body Interaction, *Proc. Computer Graphics International (CGI'07)*, Rio de Janeiro (2007).

A. Kalaiah, T. Çapın, Unified Rendering Pipeline for Autostereoscopic Displays, *Proc. 3DTV Conference*, Kos, IEEE Press (2007). DOI: 10.1109/3DTV.2007.4379427.

V. Setlur, T. Çapın, S. Chitturi, R. Vedantham, M. Ingrassia, MORE: A Mobile Open Rich Media Environment, *Proc. IEEE ICME 2006 Conference*, IEEE Press, 2029-2032 (2006). DOI: 10.1109/ICME.2006.262612.

T. Çapın, A. Haro, V. Setlur, and S. Wilkinson, Camera-Based Virtual Environment Interaction on Mobile Devices, *Proc. ISCIS'06, Springer Lecture Notes in Computer Science*, Springer, 4263, 765-773 (2006). DOI:10.1007/11902140_80.

A. Haro, V. Setlur, T. Çapın, S. Wilkinson. Mobile Camera Based Adaptive Viewing, *Proc. International Conference on Mobile and Ubiquitious Media*, ACM International Conference Proceeding Series; 154, 78-83 (2005). DOI: 10.1145/1149488.1149501.

T. Çapın, S. Chitturi, JSR-226: A Versatile API for Mobile SVG on J2ME, *Proc. ACM SIGGRAPH 2004, Web Graphics Track*, 11, ACM Press (2004). DOI: 10.1145/1186194.1186209.

T. Çapın, E. Petajan, J. Ostermann, Very Low Bitrate coding of virtual human animation in MPEG-4, *Proc. IEEE ICME 2000 – International Conference on Multimedia and Expo (ICME)*, New York, NY, Vol. 2 (2000). DOI: 10.1109/ICME.2000.871554.

T. Çapın, E. Petajan, J. Ostermann, Efficient Modeling of Virtual Humans in MPEG-4, *Proc. IEEE ICME 2000 – International Conference on Multimedia and Expo (ICME)*, New York, NY, Vol. 2 (2000). DOI: 10.1109/ICME.2000.871553.

T.K. Çapın, D. Thalmann, A Taxonomy of Networked Virtual Environments, *Proc. International Workshop on SNHC and I3D'99*, Santorini, Greece (1999).

T.K. Çapın, M. J Jovovic, J. Esmerado, A. Aubel, D. Thalmann, Efficient Network Transmission of Virtual Human Bodies, *Proc. IEEE Computer Animation '98*, Philadelphia, IEEE Computer Society Press, 41-48 (1998). DOI: 10.1109/CA.1998.681906.

C. Babski, S. R. Musse, T. Çapın, D. Thalmann, Crowd modelling in collaborative virtual environments, *Proc. ACM Symposium on Virtual Reality Software and Technology 1998*, ACM Press, 115-123, Taipei, Taiwan (1998). DOI:http://doi.acm.org/10.1145/293701.293716.

I.S. Pandzic, T.S. Çapın, E. Lee, N. Magnenat-Thalmann, D. Thalmann, Autonomous Actors in Networked Collaborative Virtual Environments, *Proc. MultiMedia Modeling '98*, IEEE Computer Society Press, 138-145 (1998). DOI: 10.1109/MULMM.1998.722991.

T.K.Çapın, I.S.Pandzic, N.Magnenat Thalmann, D.Thalmann, Integration of Avatars and Autonomous Virtual Humans in Networked Virtual Environments, *Proc. ISCIS 98*, IOS Press

(1998).

T.K.Çapın, I.S.Pandzic, N.Magnenat Thalmann, D.Thalmann, A Dead-Reckoning Algorithm for Virtual Human Figures*, Proc. IEEE Virtual Reality Annual International Symposium 1997*, IEEE Press, 161-169 (1997). DOI: 10.1109/VRAIS.1997.583066.

I.Pandzic, T. Çapın, N. Magnenat Thalmann, D. Thalmann, A Versatile Navigation Interface for Virtual Humans in Collaborative Virtual Environments, *Proc. ACM VRST '97*, ACM Press, 45-49 (1997). DOI: 10.1145/261135.261145.

I.Pandzic, T.Çapın, E.Lee, N.Magnenat Thalmann, D.Thalmann, MPEG-4 for Networked Collaborative Virtual Environments, *Proc. VSMM'97*, Geneva, IEEE Computer Society Press, 19-25 (1997).

I.Pandzic, T. Çapın, N. Magnenat Thalmann, D. Thalmann, Motor functions in the VLNET Body-Centered Networked Virtual Environment, *Proc. 3rd Eurographics Workshop on Virtual Environments*, Monte Carlo, Springer Wien, 94-103 (1996).

T. Çapın, C. Aykanat, B. Özgüç, Progressive Refinement Radiosity on Ring-Connected Multicomputers, *Proc. Visualization '93 Parallel Rendering Symposium*, ACM Press, San Jose, California, (1993). DOI: 10.1145/166181.166192.

Granted and Pending Patents

Y. Fei, K. Mori, T. Çapın, *System, Device, Method, and Computer Program Product for Annotating Media Files*, **US Patent 8,375,283** (granted February 2013).

A. Kalaiah, T. Çapın, *Apparatus, Method, and a Computer Program Product for Providing a Unified Graphics Pipeline for Stereoscopic Rendering,* **US Patent No. 8,284,204** (granted October 2012).

V. Setlur, D. Zhong, M. Hannuksela, S. Chitturi, T. Çapın, *Transport Mechanisms for Dynamic Rich Media Scenes*, USA, **US Patent No. 8,239,558** (granted August 2012).

A. Haro, V. Setlur, T. Çapın,G. Chen, *Apparatus, method and computer program product for generating a thumbnail representation of a video sequence*, USA, **US Patent No. 8,032,840**, (granted October 2011).

V. Setlur, D. Zhong, M. Hannuksela, T. Çapın, *System and Method for Providing Feedback and Forward Transmission for Remote Interaction in Rich Media Applications.* **Korean Patent No. 0,984,694** (granted September 2010).

V. Setlur, M. Ingrassia, T. Çapın, S. Chitturi, *System and method for measuring SVG document similarity. A Method for Measuring SVG Document Similarity by Reducing the Documents to their Minimal Logical Representations and then Analyzing Using Tree Isomorphism Techniques.* **US Patent 7,403,951**. (granted July 2008).

T. Çapın, S. Balcisoy, *Method And Apparatus For Extending Structured Content To Support Streaming*, **US Patent 7,064,760** (granted June 2006).

L. Öktem, T. Çapın, *Apparatus, And Associated Method, For Communicating Content In A Bandwidth-Constrained Communication System*, **US Patent 6,624,769.** (granted Sept. 2003).

V. Setlur, D. Zhong, M. Hannuksela, S. Chitturi, T. Çapın, *A Method To Embed SVG Content*

Into ISO Base Media File Format For Progressive Download And Streaming Of Rich Media Content. (PCT patent pending, filed 2005).

M. Ingrassia, S. Chitturi, A. Haro, T. Çapın, *Method For Automatically Obtaining Custom Application Icons When Changing UI Themes By Querying A Remote Icon Repository* (PCT patent pending, filed 2004).

M. Ingrassia, T. Çapın, S. Chitturi, A. Haro, *Multidimensional Tabbing for Mobile Devices*, (PCT patent pending, filed 2004).

S. Balcisoy, M. Karczewicz, T. Çapın, *Progressive Downloading Of Timed Multimedia Content*, (PCT patent pending, filed 2004).

Sponsored Research

Data Driven Character Animation – **TÜBİTAK 1001 Project** *(Grant no: 112E105),* Principal Investigator, October 2012 – October 2015, budget TL 268,803.

ALGI – **TÜBİTAK 1001 Project (***Grant no: 110E029),* Principal Investigator, October 2010 – April 2013, budget TL 245,225.

3DPHONE – An All-3D Imaging Phone – European Commission's **FP7 STREP Project** (Grant no: FP7-213349), Coordinator / Principal Investigator, February 2008 – January 2011, budget: EUR 3,462,941.

3DTV – European Commission's **FP6 NoE Project**, Researcher, 2006-2008.

Various Nokia-internal projects related to mobile graphics and user interfaces, 2000-2006.

Played a key role in setting up European **ACTS** Projects: SoNG, VIDAS, and FIVE. Role: Workpackage Leader, Researcher, 1995-1999.

Graduate Student Supervision

Completed Theses:

Gökçen Çimen, Skill Learning Based Catching Motion Control, M.S. Thesis, 2014.

Elif Bengü Kevinç, *Perceptually Driven Stereoscopic Camera Control in 3D Virtual Environments*, M.S. Thesis, 2013.

Abdullah Bülbül, *Visual Attention Models and Applications to 3D Computer Graphics*, Ph.D. Thesis, 2012.

Sami Arpa, *Cubist Style Rendering of 3D Virtual Environments*, M.S. Thesis, 2012.

Can Telkenaroğlu, *Dual-Finger 3D Interaction Techniques For Mobile Devices*, M.S. Thesis, 2012.

Işıl Doğa Yakut, *Perceived Quality Estimation in Object-Space for Animated 3D Models*, M.S. Thesis, 2012.

Cansın Yıldız, *A Depth Perception Aware Pen-Based 3D Sketching System*, M.S. Thesis, 2012.

İlker Oğuzhan Yaz, *Retargeting Human Motion to Non-Humanoid Meshes*, M.S. Thesis, 2012.

Emre Akatürk, *Creating 3D Objects with Rough Surfaces Using 2D Sketches*, M.S. Thesis, 2011.

Cihan Halit, *A Multi Scale Motion Saliency Method for Keyframe Extraction from Motion Capture Sequences*, M.S. Thesis, 2010.

Zeynep Çipiloğlu, *A Fuzzy Logic-based Approach for Enhancing Depth Perception in Computer Graphics*, M.S. Thesis, 2010.

Yeliz Yiğit, *Generating 3D Thumbnails For 3D Contents*, M.S. Thesis, 2010.

T. Sercan Pekin, *Camera Based 3D Interaction For Handheld Devices*, M.S. Thesis, 2010.

Mustafa Kabak, *Task-based Automatic Camera Placement*, M.S. Thesis, 2010.

H. Mehmet Yıldırım, *A Context Aware Based Approach For Enhancing Gesture Recognition Accuracy on Handheld Devices*, M.S. Thesis, 2010.

Mehmet Adil Yalçın, *Real-Time Simulation And Visualization Of Deformations On Heightfields*, M.S. Thesis, 2010.

Duygu Ceylan, *3D Mesh Animation System Targeted for Multi-Touch Environments*, M.S. Thesis, 2009.

Ahmet Tolgay, *Animated Mesh Simplification Based On Saliency Metrics*, M.S. Thesis, (co-supervisor) 2008.

Barkın Başarankut, *3D Hair Design and Key Frame Animation in Real Time*, M.S. Thesis, (co-supervisor), 2008.

Rıfat Aras, *3D Hair Sketching for Real-Time Hair Modeling and Dynamic Simulations*, M.S. Thesis, (co-supervisor), 2008.

Göktuğ Gökdoğan, *Towards Practical Real-Time Water Simulations: Multiphased Smoothed Particle Hydrodynamics (M-SPH)*, M.S. Thesis, (co-supervisor), 2008.

Currently Supervised Graduate Students

Ufuk Çelikcan, M.S., expected graduation 2014.

Yağız Salor, M.S., expected graduation 2015.

Arhan Bakan, M.S., expected graduation 2015.

Nail Akıncı, M.S., expected graduation 2015.

Umut Ağıl, M.S., expected graduation 2015.

Zeynep Çipiloğlu, Ph.D., expected graduation 2015.

Zümra Kavafoğlu, (co-supervisor), Ph.D., expected graduation 2015.

Hacer İlhan, (co-supervisor), Ph.D., expected graduation 2016.

Can Telkenaroğlu, Ph.D., expected graduation 2018.

International Standardization Activities

2004-2006: Member of JCP JSR-226 Expert Group. Specification lead role of the specification.

2000-2006: Member of W3C SVG Working Group. Editor of W3C SVG Mobile specification. This standard has been selected as one of the mandated graphics formats on 3G networks.

2000-2006: Participant of 3GPP standardization activities on Multimedia Messaging and Packet-Switched Streaming on 3G networks.

1996-2000: Co-chair of MPEG-4 SNHC Group on Face and Body Animation.

1999-2000: Co-chair of MPEG-4 Systems Group on Multi-user Environments.

1996-2000: Member of VRML 2.0 H-Anim Working Group.

1996-2000: Member of VRML Virtual Humans Architecture Group.

Professional Activities

Associate Editor, The Visual Computer Journal, Springer, 2014- .

Guest Editor, Computer Animation and Virtual Worlds Journal, Wiley, 2013.

Guest Editor, The Visual Computer Journal, Springer, 2008.

Program Chair, Computer Animation and Social Agents (CASA) 2013 Conference.

Program Chair, Computer Graphics International (CGI) 2008 Conference.

Program Committee Member for yearly IEEE CASA, ACM/EG Cyberworlds conferences.

Reviewer for various journals and conferences including IEEE Transactions on Visualization and Computer Graphics, IEEE Transactions on Multimedia, IEEE Transactions on Circuits/Systems for Video Technology, IEEE Transactions on Parallel and Distributed Systems, Eurographics, IEEE Computer Journal, IEEE CASA / Computer Animation Conference, ACM and IEEE Virtual Reality Conferences, IEEE Computer Graphics and Applications, Eurographics, Springer Personal and Ubit. Comp).

Member of ACM SIGGRAPH, IEEE.

Referee and reviewer for several TÜBİTAK projects; for support programs: 1001, 1002 1003, 1007, 1507, 1512, 3501.

Research Interests

How graphics and visualization techniques can facilitate **visual communications between people using a wide range of devices**, from low-end mobile phones to PCs.

Algorithms, tools, techniques, and methodologies for improving user experience in:

- Visual communications between people
- Interacting with constrained devices
- Networked virtual environments
- Augmented Reality

with emphasis on:

- **Mobile graphics platforms** – hardware / software architectures for mobile graphics; power aware computing.
- **Computer animation** – including virtual human animation, motion capture and synthesis, statistical and machine learning techniques for animation.
- **Perceptually driven graphics** – including 3D real-time rendering, retargeting imagery to small displays, image/video based rendering.
- **Interaction with graphics / images** – including 2.5 and 3D UIs, 3D sketching and

capture solutions, vision-based techniques to improve interaction.

• **Networked graphics** – including graphics compression / streaming, network protocols for transmitting graphics.

Teaching Activities

Undergraduate Courses Taught:

CMPE201: Discrete Structures of Mathematics

CMPE221: Data Structures and Algorithms

CMPE313: Software Engineering

CS 101: Algorithms and Programming I

CS 112: Introduction to Object-Oriented Programming

CS 202: Fundamental Structures of Computer Science II

CS 466: Computer Graphics II

CS 468: Principles of User Interface Design

Graduate Courses Taught:

CS 563: Real-Time Rendering and Game Programming

CS 566: User Interface Design

CS 567: Computer Animation

CS 569: Mobile and Ubiquitous Graphics

CS 590: Research Topics

CS 690: Advanced Research Topics

Undergraduate Student Industrial Training or Senior/Term Project Supervision

More than 25 senior projects supervised in 2006-2013.

Contribution to University Committees

Member of TED University Engineering Faculty Management Committee, 2014-.

Member of TED University Engineering Faculty Committee, 2014-.

Member of TED University IT Committee, 2014-.

Member of Bilkent University Engineering Faculty Management Committee (Fakülte Yönetim Kurulu), 2013-2014.

ERASMUS and Exchange Coordinator of the Computer Engineering Department of Bilkent University, 2012-.

Member of Student Performance Evaluation Committee, performing surveys and analysis of graduating students for ABET Certification, 2007-.

Academic Advisor at Bilkent University's Info Days for university student candidates.