

Selim Temizer

Cambridge, MA, USA

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EDUCATION



Massachusetts Institute of Technology (MIT), Cambridge, MA, USA

Ph.D. Candidate, Department of Electrical Engineering and Computer Science (EECS), GPA: 4.7 / 5.0

- Researched metric maps, topological maps, local/global navigation, segmentation of space, and map-making techniques for mobile robots. Implemented advanced software simulators to test various algorithms (2001 – 2004).
- Took a leave-of-absence to perform military service and to gain academic and business experiences (2004 – 2007).
- Currently designing and implementing collision avoidance systems for unmanned aerial vehicles (2007 – Present).
- Minor degree: Systems and Communications (emphasis on design and optimization techniques for optical networks).



Massachusetts Institute of Technology (MIT), Cambridge, MA, USA

M.S., Department of Electrical Engineering and Computer Science (EECS), September 2001, GPA: 4.8 / 5.0

- Designed *The Front-Point Method* to provide holonomic motion capabilities to certain non-holonomic systems.
- Researched visual obstacle detection, optical flow, and time-to-contact estimation methods for mobile robots.
- Devised and tested local navigation algorithms, both in simulated environments and on real robots.
- Collaborated with research groups at Brown University, USA (to design and compare local navigation schemes) and San Sebastian Technology Park, Spain (to test implemented schemes).



Middle East Technical University (METU), Ankara, TURKEY

B.S. with High Honors, Department of Computer Engineering, June 1999, GPA: 3.99 / 4.00

- Department rank: 1 (Department size: 80+ graduates), Class rank: 2 (Class size: 2000+ graduates).
- Received *Highest Departmental GPA Award* for 8 / 8 semesters.
- Devised an adaptive volume-rendering algorithm for parallel processors.

EXPERIENCE



MIT, Department of Electrical Engineering and Computer Science, Cambridge, MA, USA

Research Assistant, October 2007, 6 semesters, 20 hours/week

- Supervisors: Prof. Leslie Pack Kaelbling and Prof. Tomás Lozano-Pérez.
- Working in the Computer Science and Artificial Intelligence Laboratory (CSAIL) on designing partially observable markov decision process (POMDP) based collision avoidance algorithms for unmanned aerial vehicles.



Turkish Armed Forces, Scientific Decision Support Center, Ankara, TURKEY

Reserve Officer (2nd Lieutenant), April 2006, 1 year, 55 hours/week

- Performed military service at the Turkish General Staff Headquarters.
- Developed software modules for various military modeling and simulation projects.
- Prepared requirements specifications for a development project (Run-Time Infrastructure software conforming to IEEE Std. 1516.1-2000 Standard for Modeling and Simulation High Level Architecture - Federate Interface Specification).



Aydın Yazılım ve Elektronik Sanayii A.Ş. (AYESAS, Software and Electronics), Ankara, TURKEY

Senior Software Engineer / Team Leader, October 2004, 1 year, 24 hours/week

- Worked on validation, verification and documentation of a hardware driver which performs IP communication over IEEE-1394 (Firewire). Also worked on porting the same driver to Green Hills Software (GHS) INTEGRITY-178B real-time operating system and enforcing RTCA DO-178B compliance for deployment in airborne systems.
 - Developed a web-based semi-automatic Software Requirements Specification (SRS) generation and management system for reverse engineering applications.
 - Designed an initial prototype for an RTCA DO-178B compliant graphics system (OpenGL driver and windowing system) supporting multiple contexts and multiple windows that was planned to be used on airborne systems (primarily on the F-35 Lightning II cockpit displays).
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METU, Department of Computer Engineering, Ankara, TURKEY
Instructor, September 2004, 2 semesters (fall 2004, spring 2005), 10 hours/week

- Taught *CENG 230 – Introduction to C Programming* course, 2 lecture hours/week.



Meteksan, Mobilsoft (Software), Ankara, TURKEY
Team Leader, April 2004, 6 months, 42 hours/week

- Developed a prototype simulation system for scenario based driver training in realistic urban/rural traffic conditions. The prototype supported 3D computer graphics, environmental audio, rigid body dynamics and networking conforming to High Level Architecture (HLA).



MIT, Department of Electrical Engineering and Computer Science, Cambridge, MA, USA
Teaching Assistant, February 2002, 1 semester (spring 2002), 20 hours/week

- Held tutorials for *6.001 – The Structure and Interpretation of Computer Programs* course, 9 lecture hours/week.



MIT, Department of Electrical Engineering and Computer Science, Cambridge, MA, USA
Research Assistant, September 1999, 8 semesters, 20 hours/week

- Supervisor: Prof. Leslie Pack Kaelbling.
- Worked in the Artificial Intelligence Laboratory on DARPA *Mobile Autonomous Robot Software* project.



Askeri Elektronik Sanayii A.Ş. (ASELSAN, Military Electronics), Ankara, TURKEY
Intern, July 1997 and July 1998, 6 weeks each, 40 hours/week

- In 1997, implemented drivers and software controllers for various computer hardware.
- In 1998, designed Advice-of-Charge (AoC) GSM service module for ASELSAN 1920 GSM mobile phones using SDL (Specification and Description Language). Also programmed PIC chip controlled display panels that had been used for the advertisement of ASELSAN 1919 GSM mobile phones.

AWARDS / HONORS / ACHIEVEMENTS

- Graduate School Admission Test (LES): Placed 9th among 29963 applicants nationwide, Turkey, December 1998
- GRE Subject Test: 780 (Computer Science, 84% below), December 1998
- GRE General Test: 800 (Quantitative, 99% below), 800 (Analytical, 99% below), 360 (Verbal, 15% below), November 1998
- Received *Highest Departmental GPA Award* for 8 / 8 semesters at METU, 1995 – 1999
- College Admission Test / Placement (ÖYS): Placed 67th among 1.5 million applicants nationwide, Turkey, June 1995
- College Admission Test / Selection (ÖSS): Placed 55th among 1.5 million applicants nationwide, Turkey, May 1995
- Listed among *Top Ten Students* at high school graduation, GPA: 4.95 / 5.00, 1995
- Placed 3rd (won bronze medal) in 2nd National Science Olympics in the field of Physics, organized by The Scientific and Technological Research Council of Turkey (TÜBİTAK), Turkey, 1995

MEMBERSHIPS / AFFILIATIONS

- Sigma Xi: The Scientific Research Society, Full member, 2010

LANGUAGE SKILLS

- Turkish (native), English (excellent), German (took basic level classes in high school and college)

COMPUTER SKILLS

- **Languages** : C/C++, Scheme, Lisp, Prolog, Pascal, Visual Basic, Specification and Description Language (SDL)
- **Operating Systems** : DOS, Windows, Linux/Unix, Green Hills Software (GHS) INTEGRITY
- **Software / Libraries**: Matlab, MS Visual Studio, MS Office, OpenGL, Qt, OpenSceneGraph, ODE, OpenAL, PVM

INVITED PRESENTATIONS

- TOBB University of Economics and Technology, Department of Computer Engineering, Ankara, TURKEY. June 8, 2007. “(Topic 1) SAGES: Virtual Reality Shooting-Training Simulator, (Topic 2) Map-Making Techniques for Mobile Robots”
- METU Robot Society, Ankara, TURKEY. June 9, 2005. “Robotic Simulation Techniques”
- METU Robot Days’05, Ankara, TURKEY. May 7, 2005. “Robotic Simulations”
- Artificial Intelligence Research Group, Boğaziçi (Bosphorus) University, İstanbul, TURKEY. October 8, 2004. “Robotics Oriented Visual and Physical Computer Simulations”

PUBLICATIONS

1. **Selim Temizer**, Mykel John Kochenderfer, Leslie Pack Kaelbling, Tomás Lozano-Pérez and James K. Kuchar. *Collision Avoidance for Unmanned Aircraft using Markov Decision Processes*. Proceedings of the American Institute of Aeronautics and Astronautics (AIAA) Guidance, Navigation, and Control Conference. Sheraton Centre Toronto, Toronto, Ontario, Canada. August 2-5, 2010.
2. **Selim Temizer**, Mykel John Kochenderfer, Leslie Pack Kaelbling, Tomás Lozano-Pérez and James K. Kuchar. *Unmanned Aircraft Collision Avoidance Using Partially Observable Markov Decision Processes*. Project Report ATC-356, MIT Lincoln Laboratory, Advanced Concepts Program. Lexington, Massachusetts, USA. September 22, 2009.
3. **Selim Temizer**. *Using a Meta-language to Bridge the Gap between Natural Languages and Computer Languages*. Journal of Aeronautics and Space Technologies (Published by Turkish Air Force Academy), Volume 3, Number 2, pp. 25-36. July 2007.
4. **Selim Temizer**, Haluk Eliş and Namık Kemal Temizer. *SAGES: HLA-Compliant Combat Capability Training Simulator in Virtual Reality Environment with Stereo Vision, Rigid Body Dynamics and Environmental Audio Support* (Article in Turkish, abstract available in English, original title: *SAGES: Sanal Gerçeklik Ortamında HLA Uyumlu ve Stereo Görüntü, Fizik ve Çevresel Ses Destekli Savaşma Yeteneği Eğitim Simülâtörü*). Proceedings of the 2nd National Defense Applications Modeling and Simulation Conference (İkinci Ulusal Savunma Uygulamaları Modelleme ve Simülasyon Konferansı, USMOS 2007), pp. 5-14. Ankara, TURKEY. April 18-19, 2007.
5. **Selim Temizer**. *The State of the Art and the Future of Modeling and Simulation Systems*. Journal of Aeronautics and Space Technologies (Published by Turkish Air Force Academy), Volume 3, Number 1, pp. 41-50. January 2007.
6. **Selim Temizer**. *Software Structuring Techniques: The Temizer System* (Article in Turkish, abstract available in English, original title: *Yazılım Yapılandırma Teknikleri: Temizer Sistemi*). Proceedings of the 2nd National Software Engineering Symposium (İkinci Ulusal Yazılım Mühendisliği Sempozyumu, UYMS’05), pp. 305-313. Ankara, TURKEY. September 22-24, 2005.
7. Brett R. Fajen, William H. Warren, **Selim Temizer** and Leslie Pack Kaelbling. *A Dynamical Model of Visually-Guided Steering, Obstacle Avoidance, and Route Selection*. International Journal of Computer Vision 54(1/2), pp. 13-34. 2003.
8. **Selim Temizer** and Leslie Pack Kaelbling. *Holonomic Planar Motion from Non-holonomic Driving Mechanisms: The Front-Point Method*. Proceedings of Photonics Boston, Intelligent Systems and Advanced Manufacturing (SPIE, Vol. 4573, Mobile Robots XVI), pp. 56-67. Newton, Massachusetts, USA. October 29-30, 2001.
9. **Selim Temizer**. *Optical Flow Based Local Navigation*. Master’s Thesis. Massachusetts Institute of Technology, Cambridge, Massachusetts, USA. September 2001.
10. **Selim Temizer**, Ömer Sinan Saraç and Veysi İşler. *Intelligent Parallel Volume Rendering Using View Coherence on MIMD Architectures*. Proceedings of the 14th International Symposium on Computer and Information Sciences (ISCIS’99), pp. 900-907. İzmir, TURKEY. October 18-20, 1999.