

Ariel Shamir

Curriculum Vitae

Personal Information

Birth: June 7th, 1966, Evanston IL, USA
Citizenship: USA & Israel .
Address: Efi Arazi School of Computer Science
The Interdisciplinary Center
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Positions

2006 - present: Senior Lecturer, the Efi Arazi School of Computer Science, The Interdisciplinary Center, Herzliya, Israel.
2005 - present: Algorithmic Research Manager, Sensomatix Ltd.
2006 - 2007: Visiting Scientist, Mitsubishi Electric Research Laboratories, Cambridge, Massachusetts.
2000 - 2006 : Lecturer, the Efi Arazi School of Computer Science, The Interdisciplinary Center, Herzliya, Israel.
1999 - 2000: Post-doctoral fellow at the center for computational visualization of TICAM, University of Austin, Texas.
1995 - 2001: Chief scientist & manager R&D, "Heshev Developments Ltd."
1995 - 1998: Computer Science teacher at the high-school for science and art in Jerusalem.
1995 - 1998: Research assistant at the institute of computer science, The Hebrew University.
1993 - 1998: Teaching assistant at the institute of computer science, The Hebrew University.
1991 - 1995: Senior software engineer, "Heshev Developments Ltd."

Education

1999: Ph.D. in Computer Science, the Hebrew University, Jerusalem, Israel
1996: M.Sc. in Computer Science, the Hebrew University, Jerusalem, Israel
1991: B.Sc. Cum Laude. in Mathematics and Computer Science,
the Hebrew University, Jerusalem, Israel

Professional Activity

Editorials: Shamir, A., Seungyong, L., Guest Editors, *The Visual Computer*, Vol. 20, No. 4, June 2004, Special Issue on Geometric Modeling.

Tal, A., Funkhauser, T., Shamir, A., Guest Editors, *Computers & Graphics*, Vol. 30, No. 6, 2006, Special issue on Mesh Processing.

Shamir, A., Fischer, A., Guest Editors, *Journal of Shape Modeling*, Special Issue on CAD and Geometric Modeling.

Co-Chair: the 6th Korea-Israel Bi-National Conference on Geometric Modeling and Computer Graphics, Haifa, Israel, November 7-9, 2005.

Chair: Central Israel SIGGRAPH Professional Chapter, 2002 - 2005.

Program committee: Eurographics 2007, 2009; Siggraph 2008, 2009 General Submission Jury; Pacific Graphics 2004, 2005, 2007, 2008; Symposium on Geometry Processing SGP 2008, 2009; International Conferences in Central Europe on Computer Graphics, Visualization and Computer Vision WSCG 2005, 2006, 2007, 2008; Computer Graphics International 2004; 4th International Conference on Entertainment Computing 2005; Afrigraph 2006; ACM International Conference on Virtual Reality Continuum VRCIA 2006; International Conference on Computer Graphics Theory and Applications GRAPP 2007, 2008; International Symposium on Visual Computing 2006, 2007; ACM Symposium on Virtual Reality Software and Technology, VRST 2007; IEEE Conference on Shape-Modeling and Applications 2006, 2008;

Journal Reviewer: ACM Transactions on Graphics; IEEE Transactions on Visualization and Computer Graphics; IEEE Computer Graphics and Applications; Computer Aided Geometric Design; Computer Aided Design; The Visual Computer; Computer Graphics Forum; Graphical Models; computers & graphics; J. of Mathematical Science; J. of Electronic Imaging; IEEE Transactions on Automation Science and Engineering; Pattern Recognition; International Journal of Computer Vision;

Conference Reviewer: SIGGRAPH 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009; IEEE-Visualization 2002, 2003, 2004, 2005, 2007; Eurographics 2002, 2003, 2005, 2006, 2007, 2008, 2009; Pacific Graphics 2002, 2004, 2005, 2007, 2008; Solid Modeling 2003, 2004; International Meshing Roundtable 2003, 2004; 3DPVT 2002, 2004; SoCG 2002; The 3rd International Symposium on Visual Computing (ISCV07); Graphics Interfaces 2005; Symposium on Geometry Processing SGP 2007.

Tutorial: View-Dependent Rendering for Polygonal Data-sets, J. El-Sana, L. De Floriani, E. Puppo, A. Shamir, Eurographics 2002.

Membership: ACM SIGGRAPH, IEEE Computer Society, and Eurographics.

Awards & Grants

- 2008: IDC President Award for Outstanding Research
2007: Israel Science Foundation Grant for 4 years:
“Reconstruction of Complex Surfaces” (Joint grant).
2007: Israel Ministry of Science and Education Tashtiot Grant for 3 years:
“Advanced Methods For Reconstruction Of Three-Dimensional Synthetic Objects” (Joint grant).
2003: IDC President Award for Outstanding Research
2002: Israel Ministry of Science and Education Tashtiot Grant for 3 years:
“Fundamentals of Virtual Reality and Medical Applications” (Joint grant).

Teaching

- **Introduction to Computer Science in Java:** Fall 2000, Fall 2001, Fall 2002, Fall 2003, Fall 2004, Fall 2005, Fall 2007, Fall 2008.
- **Geometric Modeling and Visualization:** Spring 2002, Spring 2003, Spring 2004, Spring 2006, Spring 2009.
- **Machine Learning:** Fall 2003, Fall 2004, Spring 2008.
- **Advanced Seminar on Computer Graphics and Modeling:** Spring 2002 (*Algorithm Animation*), Spring 2005 (*Level of Details in Graphics and Visualization*), Spring 2006 (*From Shape to Motion*).

Graduate Students

- Michael Rubinstein, MSc The Interdisciplinary Center 2009, Thesis: Discrete Approaches for Media Retargeting.
- Yoav Serbrnik, MSc The Interdisciplinary Center 2009, Thesis: Interrogative Visualization of Graphs.
- Andrei Sotzio, Ph.D. Tel Aviv U. 2008. Thesis: Surface Reconstruction Techniques for Imperfect Raw-Data (joint with Prof. D. Cohen-Or).
- Amir Shaham, Msc Tel Aviv U. 2004. Thesis: Medial Axis Based Solid Representation (joint with Prof. D. Cohen-Or)
- Lior Shapira, Msc Tel Aviv U. 2005. Thesis: Mesh Feature Analysis using Geodesic Mean Shift (joint with Prof. D. Cohen-Or).
- Andrei Sotzio, Msc Tel Aviv U. 2002. Thesis: Hierarchical Shape Matching using Union of Spheres (joint with Prof. D. Cohen-Or).

Prospect:

- Lior Shapira, Ph.D. Candidate, Tel Aviv U. (joint with Prof. D. Cohen-Or).
- Ala Stolpnik, MSc Candidate, Tel Aviv U. (joint with Prof. D. Cohen-Or).
- Roni Zatzarinni, MSc Candidate, Technion (joint with Prof. A. Tal).

Publications

Journals, Books

1. L. Shapira, S. Shalom, A. Shamir, D. Cohen-Or, and H. Zhang, *Contextual Part Analogies in 3D Objects*, International Journal of Computer Vision (to appear), 2009
2. Rony Zatzarinni, Ayellet Tal, Ariel Shamir, *Relief Analysis and Extraction* ACM Transactions on Graphics, Volume 28, Number 5, SIGGRAPH ASIA (to appear), 2009
3. Tao Chen, Cheng Ming Ming, Shi-Min Hu, Ping Tan, Ariel Shamir *PhotoSketch: Internet Image Montage*, ACM Transactions on Graphics, Volume 28, Number 5, SIGGRAPH ASIA (to appear), 2009
4. Rubinstein, M., and Shamir, A., and Avidan, S. *Multi-operator Media Retargeting*, ACM Transactions on Graphics, Volume 28, Number 3, SIGGRAPH 2009
5. Shamir, A., and Avidan, S., *Seam carving for media retargeting*, Communications of the ACM, Volume 52, Number 1, pages 77-85, January 2009.
6. Shapira, L., Shamir, A., Cohen-Or, D. *Image Appearance Exploration by Model Based Navigation*, Computer Graphics Forum, Volume 28, number 2, (Eurographics 2009 Conference Proceedings). Second best paper award!
7. Liu, F., Zhang, H., Shamir, A., Cohen-Or, D. *A Part-aware Surface Metric for Shape Processing*, Computer Graphics Forum, Volume 28, number 2, (Eurographics 2009 Conference Proceedings).
8. Kraevoy, V., Sheffer, A., Shamir, A., Cohen-Or, D. *Non-homogeneous Resizing of Complex Models*, ACM Transactions on Graphics, Volume 27, Number 5, December 2008 (SIGGRAPH ASIA Conference Proceedings).
9. Shapira L., Shamir, A., *Local Geodesic Parametrization: An Ant's Perspective*, in "Mathematical Foundations of Scientific Visualization, Computer Graphics, and Massive Data Exploration". Moller, Torsten; Hamann, Bernd; Russel, Robert (Eds.) Series: Mathematics and Visualization, Springer, 2009
10. Shamir A., *A Survey on Mesh Segmentation Techniques*, Computer Graphics Forum, Volume 27, Number 6: pages 1539-1556, 2008.
11. Rubinstein, M., and Shamir, A., and Avidan, S. *Improved Seam carving for Video Retargeting*, ACM Transaction on Graphics, Volume 27, Number 3, (SIGGRAPH 2008 Conference Proceedings).
12. Shamir A., Cohen-Or D., Shapira, L., *Consistent Mesh Partitioning, and Skeletonization*, The Visual Computer, Volume 24, number 4: pages 249–259 ,2008.
13. Avidan, S. and Shamir, A., *Seam carving for content aware image resizing*, ACM Transaction on Graphics, Volume 26, Number 3, (SIGGRAPH 2007 Conference Proceedings).

14. Sharf, A., Lewiner, T., Shamir, A., Kobbelt, L., *On-the-fly Curve Skeleton Computation for 3D Shapes*, Computer Graphics Forum, Volume 26, number 3, September 2007, pages 323–328 (Eurographics 2007 Conference Proceedings).
15. Gal, R., Shamir, A., Cohen-Or D., *Pose-Oblivious Shape Signature*, IEEE Transactions on Visualization and Computer Graphics, Volume 13, No. 2, pp. 261–271, 2007.
16. Sharf, A., Blumenkrants, M., Shamir, A., and Cohen-Or, D., *Snap-Paste: An Interactive Technique for Easy Mesh Composition*, The Visual Computer, Volume 22, No. 9-11, pages 835–844, September, (Pacific Graphics 2006 Conference Proceedings).
17. Sharf, A., Lewiner, T., Shamir, A., Kobbelt, L., Cohen-Or, D., *Competing Fronts for Coarse-to-Fine Surface Reconstruction*, Computer Graphics Forum, Volume 25 No. 3, pages 389–398, (Eurographics 2006 Conference Proceedings).
18. Shamir, A., Rubinstein, M., Levinboim, T., *Generating Comics From 3D Interactive Computer Graphics*, IEEE Computer Graphics and Applications, Volume 26, No. 3, pages 30–38, 2006.
19. Shamir, A., Shaham, A., *Skeleton Based Solid Representation with Topology Preservation*, Graphical Models, Volume 68, pages 307–321, 2006.
20. Shamir, A., Shapira L., Cohen-Or, D., *Mesh Analysis using Geodesic Mean Shift*, The Visual Computer, Volume 22, pages 1–10, 2006.
21. Lee, Y., Lee, S., Shamir, A., Cohen-Or, D., Seidel, H.-P. *Mesh scissoring with minima rule and part salience*, Computer Aided Geometric Design, special issue on geometry processing, Volume 22, No. 5, pages 444–465, July 2005.
22. Shamir, A., Lee, Y., (guest editors) *Special Section on the Fourth Israel-Korea Bi-National Conference on Geometric Modeling and Computer Graphics*. The Visual Computer Volume 20, No. 4, pages 215–216, 2004.
23. Shamir, A., Sotzio, A., Cohen-Or, D. *Enhanced Hierarchical Shape Matching for Shape Transformation*, International Journal for Shape Modeling IJSM, Volume 9, No. 2, 2003.
24. Shamir, A., *Constraint Based Approach for Automatic Hinting of Digital Typefaces*, ACM Transactions on Graphics, Volume 22, No. 3, pages 131–151, 2003.
25. Bajaj, C., Pascucci, V., Shamir, A., Holt, J. R., Netravali A. N., *Dynamic Maintenance and Visualization of Molecular Surfaces* Discrete Applied Mathematics, Volume 127, No. 1, pages 23–51, 2003.
26. Shamir, A., Rappoport, A., *Compacting Oriental Fonts by Parametric Element Optimization*, The Visual Computer, Volume 15 No. 6, 1999, pp. 302–318.
27. Shamir, A., Rappoport, A., *Quality enhancements of digital typeface boundary representations*. Computers & Graphics, Volume 21, No. 6, special issue on Graphics in Electronic Printing and Publishing, 1997, pp. 713–725.

28. Shamir, A., Rappoport, A., *Extraction of typographic elements from outline representations of fonts*. Computer Graphics Forum, Volume 15, No. 3, 1996 pp. 259–268, Conference issue, proceedings, Eurographics'96 (best Paper Award 3rd place).
29. Shamir, A., *Data Structures*, The Hebrew University Student Press, Jerusalem 1992 (Textbook in Hebrew).

Refereed Conferences

1. Shapira L., Avidan S., Shamir, A., *Mode-Detection via Median-Shift*, IEEE International Conference on Computer Vision, to appear, 2009.
2. Shapira L., Shalom S., Shamir, A., Cohen-Or, D., *Part Analogies in Sets of Objects*, Eurographics Workshop on 3D Object Retrieval, pages 33–40, 2008.
3. Boaz Ben-Moshe, Liad Serruya, Ariel Shamir *Image Compression Terrain Simplification* Proceedings of the 19th Annual Canadian Conference on Computational Geometry, pages 125–128, 2007.
4. Shamir, A., *Segmentation and shape extraction of 3D boundary meshes*, Eurographics 2006 - State of the Art Reports pages 137–149, 2006.
5. Blumenkrants, M., Starovisky, H., Shamir, A., *Narrative Algorithm Visualization*, Proceedings ACM Symposium on Software Visualization, pages 17–26, September 2006.
6. Lau, E., Sharlin, E., Shamir, A., *A Robotic Interface for Retrieval of Distributed Multimedia Content*, The Eleventh International Conference on Distributed Multimedia Systems, (DMS '05), Banff, AB, Canada, Sep. 2005.
7. Lee, Y., Lee, S., Shamir, A., Cohen-Or, D., Seidel, H.-P. *Intelligent Mesh Scissoring Using 3D Snakes*, Proceedings Pacific Graphics 2004, pages 279–287.
8. Shamir, A., *A Formulation of Boundary Mesh Segmentation*, Proceedings of the 2nd International Symposium on 3D Data Processing, Visualization & Transmission 2004 (3DPVT '04), pages 82–89.
9. Shaham, A., Shamir, A., Cohen-Or, D., *Medial Axis Based Solid Representation*, Proceedings of ACM Symposium on Solid Modeling and Applications 2004, pages 37–44.
10. Sotzio, A., Shamir, A., *Feature Sensitive 3D Shape Matching*, Proceedings Computer Graphics International 2004 (CGI '04), pages 596–599.
11. Friedman, D., Feldman, Y., Shamir, A., Tsvi Dagan, *Automated Creation of Movie Summaries in Interactive Virtual Environments*, Proceedings IEEE Virtual Reality 2004, pages 191–198.
12. Shamir, A., *A View on Views*, Lecture Notes in Computer Science, Vol. 3031, Proceedings Smart Graphics 2004: 4th International Symposium, pages 90–100, Springer-Verlag.

13. Shamir, A. *Feature-Space Analysis of Unstructured Meshes*, Proceedings, IEEE Visualization 2003, Seattle, Washington, pages 185–192.
14. Shamir, A., Pascucci, V., *Temporal and Spatial Level of Details for Dynamic Meshes*, Proceedings, Virtual Reality Systems and Techniques 2001 (VRST '01), Banff, Canada, pages 423–430 .
15. Shamir, A., Pascucci, V., Bajaj, C., *Multi-Resolution Dynamic Meshes with Arbitrary Deformation*, Proceedings IEEE Visualization 2000, Salt Lake City, Utah, pages 423–430.
16. Shamir, A., Rappoport, A., *Feature-Based Design of Fonts Using Constraints*. Electronic Publishing, Artistic Imaging and Digital Typography, Proc. of the EP98 and RIDT'98 Conferences, St Malo, March 30 - April 3, 1998 Eds. Roger D. Hersch, Jacques Andre, Heather Brown, LNCS, Springer Verlag, 1998

Other Publications

1. Shamir A., Cohen-Or D., Shapira, L., *Consistent Partitioning of Meshes*, Technical report Tel-Aviv University 2005.
2. Shamir, A., Shapira, L., Cohen-Or, D., Goldental, R. *Geodesic Mean Shift*, Proc. 5th Korea Israel binational conference on geometric modeling and computer graphics, Seoul 2004, pages 51–56.
3. Shamir, A., Sotzio, A., Cohen-Or, D. *Hierarchical Shape Matching and Transformation using Union of Spheres*, Proc. Israel-Korea bi-national conference on geometric modeling and computer graphics, 2003.
4. Bajaj, C., Shamir, A., Sohn, B.-S. *Progressive Tracking of Isosurfaces in Time-Varying Scalar Fields*, CS & TICAM Technical Report TR-02-4, University of Texas at Austin, 2002
5. Shamir, A., Pascucci, V., Bajaj, C., *T-DAG : a Multi-Resolution Model for Time-Dependent Visualization* Technical Report, Texas Institute for Computational and Applied Mathematics.
6. Bajaj, C., Pascucci, V., Shamir, A., Holt, J. R., Netravali A. N., *Multi-resolution Molecular Shapes* Technical Report 99-42, Texas Institute for Computational and Applied Mathematics.
7. Shamir, A., Rappoport, A., *Digital Typefaces from Geometric Modeling Perspective*, Proc. Israel-Korea bi-national conference on geometric modeling, 1998.
8. Shamir, A., Rappoport, A., *Dynamic Typography*, Technical report, Institute of Computer Science, The Hebrew University, 1998.
9. Shamir, A., Rappoport, A., *LiveType: a Parametric Font Model Based on Features and Constraints*. Technical Report TR-97-11, Institute of Computer Science, The Hebrew University, 1997 (Technical Sketch presentation in SIGGRAPH'97).