Alexander M. Bronstein

Contact Information

Alexander Bronstein
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Academic Degrees

Technion – Israel Institute of Technology

Ph.D., Computer Science, 2007
Supervisor: Prof. Ron Kimmel

M.Sc., Electrical Engineering (*summa cum laude*), 2005
Supervisors: Dr. Michael Zibulevsky and Prof. Yehoshua Y. Zeevi

B.Sc., Electrical Engineering (*summa cum laude*), 2002

Academic appointments

Full Professor, Faculty of Computer Science, Technion, *From* 2018

Associate Professor, Faculty of Computer Science, Technion, 2016–2018

Adjunct Professor, School of Electrical Engineering, Tel Aviv University, *From* 2016

Associate Professor, School of Electrical Engineering, Tel Aviv University, 2013–2016

Senior Lecturer, School of Electrical Engineering, Tel Aviv University, 2010–2013

Adjunct Lecturer, Faculty of Electrical Engineering, Tel Aviv University, 2010

Postdoctoral Fellow, Faculty of Computer Science, Technion, 2009–2010

Visiting appointments

Visiting Lecturer, Dipartimento di Elettronica e Informazione, Politecnico di Milano, 2008

Visiting Lecturer, Department of Computer Science, Stanford University, 2009

Visiting Professor, Dipartimento di Informatica, Verona University, 2010, 2014

Visiting Professor, College of Engineering, Duke University, *From* 2014

Visiting Scientist, Weinstein Institute, Tel Aviv University, *From* 2016

Professional experience

Principal Engineer, Intel Corporation, *From* 2016

Co-founder and **Chief Scientist**, Videocites ltd., *From* 2015

Senior Research Scientist, Intel Corporation, 2012–2016

Co-founder and **Principal technologist**, Invision ltd., 2009–2012

Co-founder and **Vice President of video technology**, Novafora Inc., 2004–2009

Research interests

Processing and analysis of geometric shapes, video analysis, large-scale computer vision, similarity and invariance learning, nonlinear dimensionality reduction, multi-modal data modeling, parsimonious data modeling.

Teaching experience

Technion, Department of Electrical Engineering

Teaching assistant, Visual and auditory systems (undergraduate), 2003 – 2004

Instructor, Lab in medical imaging (undergraduate)*, 2004

Teaching assistant, Computer graphics (undergraduate), 2004

Technion, Department of Computer Science

Instructor, Project in operating systems (undergraduate), 2005

Teaching assistant, Numerical geometry of images (undergraduate)*, 2006

Lecturer, Advanced topics in computer vision (graduate)*, 2006

Lecturer, Seminar in computer graphics (graduate)*, *From* 2016

Lecturer, Logic design (undergraduate), *From* 2017

Lecturer, Digital image processing (undergraduate/graduate)*, *From* 2017

Lecturer, Deep learning on computing accelerators (undergraduate/graduate)*, *From* 2018

Politecnico di Milano, Dipartimento di Elettronica e Informazione

Lecturer, Numerical geometry of non-rigid shapes (graduate)*, 2008

Stanford University, Department of Computer Science

Lecturer, Topics in geometric algorithms (graduate)*, 2009

Verona University, Dipartimento di Informatica

Lecturer, Numerical geometry of non-rigid shapes (graduate)*, 2010

Lecturer, Computational shape analysis (short graduate course)*, 2014

Duke University, College of Engineering

Lecturer, Optimization for scientists and engineers (short graduate course)*, 2013

Instructor, Digital image (ad)ventures (undergraduate/graduate)*, 2014

Tel Aviv University, Department of Electrical Engineering

Lecturer, Processing and analysis of geometric shapes (graduate)*, 2010-2012

Lecturer, Random signals and noise (undergraduate), 2011-2016

Lecturer, Digital processing of single and multi-dimensional signals (graduate)*, 2012-2017

Lecturer, Processing and analysis of video (graduate)*, 2013-2017

Lecturer, Optimization (graduate)*, *From* 2014

Academic supervisor, Advanced lab in image processing (graduate), 2015–2016

Tutorials and Short Courses

Lecturer, Numerical geometry of non-rigid shapes*
Computer Vision and Pattern Recognition (CVPR), Minneapolis, USA, 2007

Lecturer, Numerical geometry of non-rigid shapes*
Intl. Conference on Computer Vision (ICCV), Kyoto, Japan, 2009

Lecturer, Numerical geometry of non-rigid shapes*
SIAM Imaging Science meeting, Chicago, USA, 2010

Lecturer, Diffusion geometry in shape analysis*
European Conference on Computer Vision (ECCV), Heraklion, Greece, 2010

Lecturer, Diffusion geometry methods in shape analysis*
Computer Vision and Pattern Recognition (CVPR), Colorado Springs, USA, 2011

Lecturer, Spectral methods in shape analysis*
Summer School on Image Processing (SSIP), Szeged, Hungary, 2011

Lecturer, Diffusion geometry in shape analysis*
Eurographics, Cagliari, Italy, 2012

Lecturer, Diffusion geometry in shape analysis*
Symposium on Geometry Processing, Genova, Italy, 2013

Lecturer, Diffusion geometry in shape analysis*
Intl. Conference on Computer Vision, Sydney, Australia, 2013

Lecturer, Bases for images and surfaces (BASIS)*
Computer Vision and Pattern Recognition (CVPR), Columbus, USA, 2014

Lecturer, Summer school on computational shape analysis*
Universidad La Salle, Arequipa, Peru, 2015

Lecturer, Spectral methods for 3D data analysis*
Computer Vision and Pattern Recognition (CVPR), Honolulu, USA, 2017

* *indicates new courses with original content*

DEPARTMENTAL ACTIVITIES

Vice Dean for Industry Liasons, Faculty of Computer Science, Technion, 2018

Member, Curriculum committee, *From* 2017

Head, Center for Intelligent Systems, *From* 2016

Head, Vision Theory and Applications (VISTA) Laboratory, *From* 2016

PUBLIC PROFESSIONAL ACTIVITIES

Associate Editor for SIAM Journal on Imaging Sciences (SIIMS) · *From* 2018

Reviewer for Intl. Journal of Computer Vision (IJCV), IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), Journal of Computer Vision and Image Understanding (CVIU), SIAM Journal on Imaging Sciences (SIIMS), Journal of Machine Learning Research (JMLR), European Conference of Computer Vision (ECCV), *From* 2007

Reviewer of grant proposals for the Israeli Science Foundation and the European Research Council, *From* 2014

Member of the grant proposal judgement committee for the Israeli Science Foundation, 2015

Membership in professional societies

Institute of Electrical and Electronic Engineers (IEEE), *Member* 2001-2011 · *Senior Member* since 2012 · *Fellow* since 2018

Association for Computing Machinery (ACM), *Member* 2012

Society for Industrial and Applied Mathematics (SIAM), *Member* 2017

Fellowships, Awards and Honors

President's achievement list *for excellence in studies*, 1999–2001

Technion Department of Humanities and Arts award *for the translation of Shakesperian sonnets into Italian*, 2001

Kasher prize *for best undergraduate project*, 2002

Thomas Schwartz prize *for best undergraduate project*, 2002

Technion Graduate School scholarship *for excellence in studies*, 2003

Invited as a delegate to the International Achievement Summit, Washington DC, 2003

Hershel Rich Technion innovation award *for work on facial recognition*, 2003

Gensler counter terrorism prize *for work on facial recognition*, 2003

Technion Excellence program alumnus, 2003

Kasher prize *for best undergraduate project supervision*, 2003, 2004

Best paper award, *Copper Mountain Conference on Multigrid Methods*, USA, 2005

Adams fellowship *(renounced)*, 2006

Wilk Familiy award *for best undergraduate project supervision*, 2007

Krill prize by the Wolf Foundation *for excellence in scientific research*, 2012

Tel Aviv University Faculty of Engineering Dean's honorable mention for excellence in teaching, 2013

Tel Aviv University Rector's list for excellence in teaching, 2013, 2014

Fellow of the IEEE *for contributions to three-dimensional geometric processing in imaging*, 2018

Graduate students

Completed Ph.D. theses

Roee Litman (2012–2017) · *Modeling and learning similarity of shapes, images and signals* · Supervisor: Prof. Alex Bronstein · Currently Research Scientist, General Motors

Haim Harel (2012–2017) · *Phase-coded aperture for extended depth-of-field imaging and depth measurement capabilities from a single image* · Supervisor: Prof. Alex Bronstein, Co-supervisor: Prof. Emanuel Marom · Currently Postdoc, University of Toronto

Or Litani (2014–2018) · *Geometry and learning for scene understanding and synthesis* · Supervisor: Prof. Alex Bronstein · Currently Postdoc, Stanford University and Facebook

Tal Remez (since 2014-2018) · *New data-models and priors for learning-based computer vision and image reconstruction techniques* · Supervisor: Prof. Alex Bronstein · Currently Research Scientist, Google

Completed M.Sc. theses

Jonathan Pokrass (2010-2012) · *Intrinsic shape matching* · Supervisor: Prof. Alex Bronstein · Currently Manager, Apple

Roee Litman (2010-2012) · *Detection of stable components in deformable shapes*· Supervisor: Prof. Alex Bronstein

Or Litani (2011-2012) · *Regularized multi-part shape registration and segmentation*· Supervisor: Prof. Alex Bronstein

Ohad Menashe (2011-2014) · *Real-time compressed imaging of scattering volumes*· Supervisor: Prof. Alex Bronstein · Currently Principal Engineer, Audi

Tal Ben Yakar (2012-2014) · *Automatic polyphonic music transcription*· Supervisor: Prof. Alex Bronstein

Amit Boyarski (2012-2014) · *Optimization of distance maps with applications to deformable shape processing*· Supervisor: Prof. Alex Bronstein

Shachar Yossef (2015-2017) · *FPGA platform for real-time image enhancement*· Supervisor: Prof. Alex Bronstein

Eli Schwartz (2016-2018) · *End-to-end learning of the full image processing pipeline* Supervisor: Prof. Alex Bronstein, Co-supervisor: Prof. Raja Giryes

Keren Rotker (2013-2018) · *Over-parameterized models for vector fields with application to phase-contrast MRI data* · Supervisor: Prof. Alex Bronstein, Co-supervisor: Dr. Dafna Ben Bashat

Ph.D. theses in progress

Evgeny Tstitsin (since 2013 · expected graduation in 2018) · *Source estimation and classification for real-time neurofeedback and brain-machine interface* · Supervisor: Prof. Alex Bronstein, Co-supervisor: Prof. Amir Boag

Amit Boyarski (since 2015 · expected graduation in 2019) · *Topics in graph isomorphism and shape matching* · Supervisor: Prof. Alex Bronstein

Chaim Baskin (since 2017 · expected graduation in 2020) · *Hardware and software optimization of deep neural networks* · Supervisor: Prof. Alex Bronstein, Co-supervisor: Prof. Avi Mendelson

Aviv Rosenberg (since 2018 · expected graduation in 2022) · *A learning-based approach for characterisation and classification of heart function from beat-interval signals* · Supervisor: Prof. Alex Bronstein, Co-supervisor: Prof. Yael Yaniv

M.Sc. theses in progress

Ortal Senouf (since 2017 · expected graduation in 2018) · *Inverse problems in medical ultrasound*· Supervisor: Prof. Alex Bronstein, Co-supervisor: Dr. Michael Zibulevsky

Sanketh Vedula (since 2017 · expected graduation in 2018) · *Inverse problems in medical ultrasound*· Supervisor: Prof. Alex Bronstein, Co-supervisor: Dr. Michael Zibulevsky

Idan Hasson (since 2017 · expected graduation in 2018) · *EMG-based hand gesture recognition*· Supervisor: Prof. Alex Bronstein

Tal Mund (since 2015 · expected graduation in 2018) · *Electromagnetic EEG phantom*· Supervisor: Prof. Alex Bronstein

Yochai Tzur (since 2017· expected graduation in 2018) · *Reinforcement learning in home automation systems*· Supervisor: Prof. Alex Bronstein

Maria Tunik (since 2017 · expected graduation in 2019) · *Learning problems in recommender systems* · Supervisor: Prof. Alex Bronstein

Yonathan Elul (since 2018 · expected graduation in 2020) · *Prediction of atrial fibrillation events* · Supervisor: Prof. Alex Bronstein, Co-supervisor: Prof. Yael Yaniv

Post-docs and Long-term visitors

Dr. Alexander Masley (since 2018) · *Geometry representation of music*

Dr. Or Litany (2018) · *Spectral approaches to partial shape correspondence*

Dr. Anastasia Dubrovina (2016) · *Graph isomorphism problems*

Research Grants

Competitive

Israel Science Foundation (ISF) · *New faculty equipment grant* (PI), 2011 · USD 60K

Israel Science Foundation (ISF) · *Spectral methods for deformable shape analysis* (PI), 2011 · ILS 720K

Binational Science Foundation (BSF) · *Sparse modeling of weakly-coupled multimodal data* (PI joint with Prof. Guillermo Sapiro, Duke University), 2011 · USD 75K

German Israeli Foundation (GIF) · *Regular structure in deformable 3D geometry* (PI), 2011 · EUR 39K

European Research Council (ERC) startup grant · *Rapid parsimonious modeling (RAPID)* (PI), 2013 · EUR 1.5M

European Research Council (ERC) proof of concept grant · *Spatial superresolution of electrophysiological measurements (NETEEG)* (PI), 2015 · EUR 150K

Kamin Applied Research Grant · *Real-time compressed imaging* (PI), 2014 · ILS 800K

Israeli Ministry of Science · *Talk to your brain online (T2URBO)* (PI), 2014 · ILS 2M (PI joint with Profs. Doron Freedman, Nira Liberman, Oren Shriki, and Talma Hendler)

TASP · *GPS jamming and spoofing for landing a quadcopter* (PI in place of Prof. Ehud Rivlin), 2016 · USD 40K

Ministry of Defence · *Monocular VO* (PI in place of Prof. Ehud Rivlin), 2016 · USD 55.6K

Technion Biomedical Informatics Grant · *Towards predictive treatment of cardiac fibrillation*, 2018 · USD 200K (PI joint with Profs. Yael Yaniv, Assaf Schuster, Mahmoud Suleiman, Shmuel Rispler)

Industrial

Hyundai · *Anti-adversarial attack techniques* (PI joint with Prof. Avi Mendelson), 2018 · USD 250K

Google · *Localization with limited annotation* (PI), 2018 · USD 9K

Intel · *Efficient inference of CNNs on FPGA-based platform* (PI joint with Prof. Avi Mendelson), 2017 · USD 17K

Publications

Theses

1. A. M. Bronstein
   Blind deconvolution using relative Newton algorithm and learnable sparse representations
   Department of Electrical Engineering, Technion, 2005.

2. A. M. Bronstein
   Numerical geometry of non-rigid shapes: embedding problems
   Department of Computer Science, Technion, 2007.

Refereed papers in professional journals

1. A. M. Bronstein, M. M. Bronstein, M. Zibulevsky, H. Azhari
   Reconstruction in ultrasound diffraction tomography using non-uniform FFT
   IEEE Trans. Medical Imaging, vol. 21(1), pp. 1395–1401, 2002.
   (*preliminary version appeared in* Proc. ISBI, 2002).

2. A. M. Bronstein, M. M. Bronstein, M. Zibulevsky, Y. Y. Zeevi
   Optimal nonlinear line-of-flight estimation in positron emission tomography
   IEEE Trans. Nuclear Science, vol. 50(3), pp. 421–426, 2003.
   (*preliminary version appeared in* Proc. ISBI, 2002).

3. A. M. Bronstein, M. M. Bronstein, M. Zibulevsky
   Blind source separation using block-coordinate relative Newton method
   Signal Processing, vol. 84(8), pp. 1447–1459, 2004.

4. M. M. Bronstein, A. M. Bronstein, M. Zibulevsky, Y. Y. Zeevi
   Blind deconvolution of images using optimal sparse representations
   IEEE Trans. Image Processing, vol. 14(6), pp. 726–736, 2005.

5. A. M. Bronstein, M. M. Bronstein, M. Zibulevsky
   Relative optimization for blind deconvolution
   IEEE Trans. Signal Processing, vol. 53(6), pp. 2018–2026, 2005.

6. A. M. Bronstein, M. M. Bronstein, M. Zibulevsky
   Quasi maximum likelihood MIMO blind deconvolution: super- and sub-gaussianity vs. consistency
   IEEE Trans. Signal Processing, vol. 53(7), pp. 2576–2579, 2005.

7. A. M. Bronstein, M. M. Bronstein, M. Zibulevsky, Y. Y. Zeevi
   Sparse ICA for blind separation of transmitted and reflected images
   Intl. Journal of Imaging Science and Technology, vol. 15(1), pp. 84–91, 2005.
   (*preliminary version appeared in* Proc. ICA, 2003).

8. A. M. Bronstein, M. M. Bronstein, R. Kimmel
Three-dimensional face recognition
Intl. Journal of Computer Vision (IJCV), vol. 64(1), pp. 5–30, 2005
(*preliminary version appeared in* Proc. AVBPA, 2003).

9. M. M. Bronstein, A. M. Bronstein, R. Kimmel and I. Yavneh
Multigrid multidimensional scaling (*invited*)
Numerical Linear Algebra with Applications, vol. 13(2–3), pp. 149–171, 2006.

10. A. M. Bronstein, M. M. Bronstein, R. Kimmel
Generalized multidimensional scaling: a framework for isometry-invariant partial surface matching
Proc. National Academy of Sciences (PNAS), vol. 103(5), pp. 1168–1172, 2006.

11. A. M. Bronstein, M. M. Bronstein, R. Kimmel
Efficient computation of isometry-invariant distances between surfaces
SIAM Journal of Scientific Computing, vol. 28(5), pp. 1812–1836, 2006.

12. A. M. Bronstein, M. M. Bronstein, R. Kimmel
Expression-invariant representations of faces
IEEE Trans. Image Processing, vol. 16(1), pp. 188–197, 2007.

13. A. M. Bronstein, M. M. Bronstein, R. Kimmel
Calculus of non-rigid surfaces for geometry and texture manipulation
IEEE Trans. Vis. and Computer Graphics (TVCG), vol. 13(5), pp. 902–913, 2007.

14. A. M. Bronstein, M. M. Bronstein, R. Kimmel
Weighted distance maps computation on parametric three-dimensional manifolds
Journal of Computational Physics, vol. 225(1), pp. 771–784, 2007.

15. A. M. Bronstein, M. M. Bronstein, A. M. Bruckstein and R. Kimmel
Analysis of two-dimensional non-rigid shapes
Intl. Journal Computer Vision (IJCV), vol. 78(1), pp. 67–88, 2008.

16. O. Weber, Y. Devir, A. M. Bronstein, M. M. Bronstein, R. Kimmel
Parallel algorithms for approximation of distance maps on parametric surfaces
ACM Trans. Graphics (TOG), vol. 27(4), article 104, 2008.

17. A. M. Bronstein, M. M. Bronstein, R. Kimmel
Topologically-invariant similarity of non-rigid shapes
Intl. Journal of Computer Vision (IJCV), vol. 81(3), pp. 281–301, 2009.

18. A. M. Bronstein, M. M. Bronstein, Y. Carmon, R. Kimmel
Partial similarity of shapes using a statistical significance measure (*invited*)
IPSJ Trans. Computer Vision and Application, vol. 1, pp. 105–114, 2009.

19. A. M. Bronstein, M. M. Bronstein, A. M. Bruckstein, R. Kimmel
Partial similarity of objects, or how to compare a centaur to a horse
Intl. Journal Computer Vision (IJCV), vol. 1, pp. 105–114, 2009.

20. A. M. Bronstein, M. M. Bronstein, R. Kimmel, M. Mahmoudi, G. Sapiro
A Gromov-Hausdorff framework with diffusion geometry for topologically-robust non-rigid shape matching
Intl. Journal Computer Vision (IJCV), vol. 89/2-3, pp. 266–286, 2010.

21. D. Raviv, A. M. Bronstein, M. M. Bronstein, R. Kimmel
Full and partial symmetries of non-rigid shapes
Intl. Journal of Computer Vision (IJCV), vol. 89/1, pp. 18–39, 2010
(*preliminary version appeared in* NRTL, Proc. ICCV, 2007).

22. G. Rosman, A. M. Bronstein, M. M. Bronstein, R. Kimmel
Nonlinear dimensionality reduction by topologically constrained isometric embedding
Intl. Journal of Computer Vision (IJCV), vol. 89/1, pp. 56-68, 2010

23. A. M. Bronstein, M. M. Bronstein, M. Ovsjanikov, L. Guibas
Shape Google: geometric words and expressions for invariant shape retrieval
ACM Trans. on Graphics (TOG), vol. 30/1, pp. 1-20, 2011
(*preliminary version appeared in* NORDIA, Proc. ICCV, 2009).

24. M. M. Bronstein and A. M. Bronstein
Shape recognition with spectral distances
IEEE Trans. on Pattern Analysis and Machine Intelligence (PAMI), vol. 33/5, pp. 1065-1071, 2011.

25. R. Kimmel, C. Zhang, A. M. Bronstein, M. M. Bronstein
Are MSER features really interesting?
IEEE Trans. on Pattern Analysis and Machine Intelligence (PAMI), vol. 33/11, pp. 2316-2320, 2011.

26. R. Litman*, A. M. Bronstein, M. M. Bronstein
Diffusion-geometric maximally stable component detection in deformable shapes
Computers and Graphics (CAG), vol. 35/3, 2011.

27. C. Strecha, A. M. Bronstein, M. M. Bronstein, P. Fua
LDAHash: Improved matching with smaller descriptors
IEEE Trans. on Pattern Analysis and Machine Intelligence (PAMI), 2011.

28. D. Raviv, A. M. Bronstein, M. M. Bronstein, R. Kimmel, N. Sochen
Affine-invariant geodesic geometry of deformable 3D shapes
Computers and Graphics (CAG), vol. 35/3, 2011.

29. R. Litman*, A. M. Bronstein, M. M. Bronstein
Stable volumetric features in deformable shapes
Computers and Graphics (CAG), vol. 36/5, 2012.

30. J. Pokrass*, A. M. Bronstein, M. M. Bronstein
Partial shape matching without point-wise correspondence
Numerical Mathematics: Theory, Methods & Applications, vol. 6/1, 2013.

31. J. Pokrass*, A. M. Bronstein, M. M. Bronstein, P. Sprechmann, G. Sapiro
Sparse modeling of intrinsic correspondences
Eurographics Computer Graphics Forum, vol. 32/2, pp. 459–468, 2013.

32. A. Kovnatsky, M. M. Bronstein, A. M. Bronstein, K. Glashoff, R. Kimmel
Coupled quasi-harmonic bases
Eurographics Computer Graphics Forum, vol. 32/2, pp. 439–448, 2013.

33. D. Raviv, A. M. Bronstein, M. M. Bronstein, R. Kimmel, N. Sochen
Equi-affine invariant geometry for shape analysis
Journal of Mathematical Imaging and Vision (JMIV), 2013.

34. R. Litman*, A. M. Bronstein
Learning spectral descriptors for deformable shape correspondence
IEEE Trans. Pattern Analysis and Machine Intelligence (PAMI), vol. 36/1, 2014.

35. J. Masci, M. M. Bronstein, A. M. Bronstein, J. Schmidhuber
Multimodal similarity-preserving hashing
IEEE Trans. Pattern Analysis and Machine Intelligence (PAMI), vol. 36/4, 2014.

36. R. Litman*, A. M. Bronstein, M. M. Bronstein, U. Castellani
Supervised learning of bag-of-features shape descriptors using sparse coding
Computer Graphics Forum (CGF), vol. 33/5, pp. 127–136, 2014.

37. S. Korman, R. Litman*, S. Avidan, A. M. Bronstein
Probably approximately symmetric: Fast rigid symmetry detection with global guarantees
Computer Graphics Forum (CGF), vol. 34/1, pp. 2-13, 2015.

38. Y. Aflalo, A. M. Bronstein, R. Kimmel
On convex relaxation of graph isomorphism
Proc. National Academy of Sciences (PNAS), 2015.

39. P. Sprechmann, A. M. Bronstein, G. Sapiro
Learning efficient sparse and low-rank models
IEEE Trans. Pattern Analysis and Machine Intelligence (PAMI), 2015.

40. D. Eynard, A. Kovnatsky, M. M. Bronstein, K. Glashoff, A. M. Bronstein
Multimodal manifold analysis using simultaneous diagonalization of Laplacians
IEEE Trans. Pattern Analysis and Machine Intelligence (PAMI), 2015.

41. H. Haim, A. M. Bronstein, E. Marom
Computational all-in-focus imaging using an optical phase mask
OSA Optics Express, vol. 23, No. 19, 2015.

42. D. Pickup, X. Sun, P. L. Rosin, R. R. Martin, Z. Cheng, Z. Lian, M. Aono, A. Ben Hamza, A. M. Bronstein, M. M. Bronstein, S. Bu, U. Castellani, S. Cheng, V. Garro, A. Giachetti, A. Godil, J. Han, H. Johan, L. Lai, B. Li, C. Li, H. Li, R. Litman*, X. Liu, Z. Liu, Y. Lu, A. Tatsuma, J. Ye
Shape Retrieval of Non-Rigid 3D Human Models
Intl. Journal of Computer Vision (IJCV), 2016.

43. X. Bian, H. Krim, A. Bronstein, L. Dai
Sparsity and Nullity: Paradigms for Analysis Dictionary Learning
SIAM J. Imaging Sci., vol. 9, No. 3, pp. 1107–1126, 2016.

44. O. Litani*, E. Rodolà, A. M. Bronstein, M. M. Bronstein, D. Cremers
Non-rigid puzzles
Computer Graphics Forum (CGF), vol. 35(5), 2016 · *SGP best paper award*

45. R. Giryes, G. Sapiro, A. M. Bronstein
Deep neural networks with random Gaussian weights: A universal classification strategy?
IEEE Trans. Signal Processing, vol. 64, No. 13, pp. 3444-3457, 2016.

46. O. Litany*, T. Remez*, D. Freedman, L. Shapira, A. Bronstein, R. Gal
ASIST: Automatic Semantically Invariant Scene Transformation
Computer Vision and Image Understanding, vol. 157, pp. 284–299, 2017.

47. O. Litani*, E. Rodolà, A. M. Bronstein, M. M. Bronstein
Fully-spectral partial shape matching
Computer Graphics Forum (CGF), vol. 36, No. 2, 2017.

48. R. Giryes, Y. C. Eldar, A. M. Bronstein, G. Sapiro
Tradeoffs between convergence speed and reconstruction accuracy in inverse problems
IEEE Trans. Signal Processing, vol. 66(7), pp. 1676–1690, 2018.

49. H. Haim, S. Elmalem, R. Giryes, A. M. Bronstein, E. Marom
Depth estimation from a single image using deep learned phase coded mask
IEEE Trans. Comp. Imaging, 2018.

50. O. Litany*, T. Remez*, R. Giryes, A. M. Bronstein
Fully-convolutional Gaussian and Poisson denoising
IEEE Trans. Imag. Processing, 2018.

51. E. Schwartz*, R. Giryes, A. M. Bronstein
DeepISP: Towards learning an end-to-end image processing pipeline
IEEE Trans. Imag. Processing, 2018.

52. Y. Choukroun, A. Shtern, A. M. Bronstein, R. Kimmel
Hamiltonian operator for spectral shape analysis
IEEE Trans. Vis. and Computer Graphics (TVCG), 2018.

Books

1. A. M. Bronstein, M. M. Bronstein, R. Kimmel
Numerical geometry of non-rigid shapes
Springer (345 p.), 2008

2. A. M. Bruckstein, B. ter Haar Romeny, A. M. Bronstein, M. M. Bronstein (Eds.)
Scale space and variational methods in computer vision
Lecture Notes in Computer Science, vol. 6667 (798 p.), Springer, 2011

3. M. Spagnuolo, M. M. Bronstein, A. M. Bronstein, A. Ferreira (Eds.)
Eurographics Workshop on 3D Object Retrieval
Eurographics Association (126 p.), 2012

Chapters in books

1. A. M. Bronstein, M. M. Bronstein, R. Kimmel
Expression invariant face recognition: faces as isometric surfaces
Face Processing: Advanced Modeling and Methods (R. Chellappa, W. Zhao, Eds.)
Academic Press, pp. 159-183 (25 p.), 2006

2. A. M. Bronstein, M. M. Bronstein, M. Zibulevsky
Blind source separation – biomedical applications
Wiley Encyclopedia on Biomedical engineering (M. Akay, Ed.)
Wiley, 2006.

3. A. M. Bronstein, M. M. Bronstein, R. Kimmel
Story of Cinderella: biometrics and isometry-invariant distances
3D Imaging for Safety and Security (A. Koschan, M. Pollefeys, M. Abidi, Eds.)
Springer, pp. 119-131 (13 p.), 2007

4. A. M. Bronstein, M. M. Bronstein
Manifold intrinsic similarity
Handbook of Mathematical Methods in Imaging (O. Scherzer, Ed.)
Springer, pp. 1859-1908 (50 p.), 2011

5. A. M. Bronstein, M. M. Bronstein, M. Ovsjanikov
Feature based methods in 3D shape analysis
3D Imaging, Analysis, and Applications (Y. Liu, P. Bunting, N. Pears, Eds.)
Springer, pp. 185-219 (35 p.), 2012

6. R. Litman*, A. M. Bronstein, M. M. Bronstein
   Stable semi-local features for non-rigid shapes
   Innovations for Shape Analysis (M. Breuss, A. M. Bruckstein, P. Maragos, Eds.)
   Springer, pp. 161-189 (29 p.), 2013

7. G. Rosman, A. M. Bronstein, M. M. Bronstein, R. Kimmel
   Group-valued regularization for motion segmentation of articulated shapes
   Innovations for Shape Analysis (M. Breuss, A. M. Bruckstein, P. Maragos, Eds.)
   Springer, pp. 263-281 (18 p.), 2013

8. P. Sprechmann, A. M. Bronstein, G. Sapiro
   Supervised non-negative matrix factorization for audio source separation
   Excursions in Harmonic Analysis (R. Balan *et al.* Eds.)
   Birkhaeuser, pp. 407-420 (14 p.), 2015.

9. J. Pokrass*, A. M. Bronstein, M. M. Bronstein, P. Sprechmann, G. Sapiro
   Sparse models for intrinsic correspondence of deformable shapes
   Perspectives in Shape Analysis (P. Maragos *et al.* Eds.)
   Springer, pp. 211-230 (20 p.), 2016.

10. O. Litany*, E. Rodola, A. M. Bronstein, M. M. Bronstein, D. Cremers
    Partial single- and multi-shape dense correspondence using functional maps
    The Handbook of Numerical Analysis
    Elsevier, *upcoming*

Refereed papers in conference proceedings

1. A. M. Bronstein, M. M. Bronstein, M. Zibulevsky, Y. Y. Zeevi
   Optimal nonlinear estimation of photon coordinates in PET
   Proc. Intl. Symp. Biomedical Imaging (ISBI), pp. 541–544, Washington, DC, USA, June 7-9, 2002.

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(in Hebrew: *Zihuy panim tlat-memadi - m'tzeu et hahevdelim*)
Hi-tech Magazine, vol. 84, pp. 9–12, 2003.

3. A. M. Bronstein, M. M. Bronstein
Similarity learning in image processing and computer vision problems
(in Hebrew: *Lemidat dimyon beba'ayot ibud t'muna vereiya memuhshevet*)
Tehnologiyot, January, 2010.

4. A. M. Bronstein
New dimensions of media
Revista de Ciencias de la Computación, Universidad La Salle, Peru, August, 2015.

Conferences

Plenary, keynote, or invited talks

Joint extrinsic and intrinsic similarity of nonrigid shapes · Computer vision symposium, Technische Universität Wien, 2007 · *invited talk*

Numerical geometry of non-rigid shapes · MAIPCV Symposium, Hokkaido University, Japan, 2008 · *invited talk*

A metric approach to nonrigid shape analysis · IPAM Workshop on Laplacian eigenvalues and eigenfunctions, UCLA, 2009 · *invited talk*

Learning similarity of visual data · Israel Machine Vision Conference (IMVC), 2010 · *invited talk*

Local & global diffusion geometry in shape analysis · Summer School on Image Processing (SSIP), Szeged University, Hungary, 2011 · *invited lecture*

Spectral analysis of three-dimensional media · IPAM Workshop on large scale multimedia search, UCLA, 2012 · *invited talk*

Local & global diffusion geometry in shape analysis · Dagstuhl Seminar Perspectives in Shape Analysis, 2012 · *invited talk*

Spectral methods in deformable shape analysis · Israeli Machine Vision Conference, 2012 · *invited talk*

Learning efficient sparse models · FIRST Workshop, 2012 · *invited talk*

New dimensions of media · Communication and Information Technology 2025, Irvine CA, 2012 · *invited talk*

Sparse models in shape analysis · Computational Metric Geometry in Image and Shape Processing, Israel IEEE Convention, 2012 · *invited talk*

Sparse models in shape analysis · SIAM Imaging Sciences, 2014 · *invited talk*

Sparse models in shape analysis · Dagstuhl Seminar Perspectives in Shape Analysis, 2014 · *invited talk*

Graph matching: relax or not? · Research Workshop on Shape and Image Modeling and Analysis, 2014 · *invited talk*

Graph matching: relax or not? · Simons Institute Workshop Spectral Algorithms: From Theory to Practice, 2014 · *invited talk*

Graph matching: relax or not? · Interdisciplinary Distinguished Seminar Series, Dept. of Electrical and Computer Engineering, North Carolina State University, 2014 · *invited talk*

Data analysis tools for large-scale computer vision and multi-media · Intl. Congress on Industrial and Applied Mathematics (ICIAM), 2015 · *invited talk*

Deep neural networks with random Gaussian weights: a universal classification strategy? · IPAM Workshop Shape Analysis and Learning by Geometry and Machine, UCLA, 2016 · *invited talk*

L_1 norm minimization on manifolds · Dagstuhl Seminar Functoriality in Geometric Data, 2017 · *invited talk*

Laplace-Beltrami operator – the Swiss army knife of shape analysis problems · Workshop on Geometry and Shape Analysis in Biological Sciences, National University of Singapore, 2017 · *invited talk*

Geometry and learning in 3D correspondence problems · 3rd Intl. Workshop on Recovering 6D Object Pose, ICCV, 2017 · *keynote talk*

Geometry and learning in 3D correspondence problems · Multiview Relationships in 3D Data, ICCV, 2017 · *keynote talk*

Geometry and learning in 3D correspondence problems · Flows, mappings and shapes, Isaac Newton Instittue, 2017 · *invited talk*

Spectral partial shape matching · Nonlinear Data: Theory and Algorithms, Oberwolfach, 2018 · *invited talk*

Geometry and learning in 3D shape processing problems · Intl. Joint Conference on Computer Vision, Imaging and Computer Graphics Theory and Applications (VISIGRAPP), 2018 · *keynote talk*

Tradeoffs between speed and accuracy in inverse problems · London Workshop on Mathematical Methods in Signal Processing, 2018 · *invited talk*

Participation in organizing conferences

Co-chair · First IEEE Workshop on Non-rigid Shape Analysis and Deformable Image Alignment (NORDIA), Computer Vision and Pattern Recognition (CVPR), Anchorage, USA, 2008.

Co-chair · Second IEEE Workshop on Non-rigid Shape Analysis and Deformable Image Alignment (NORDIA), Intl. Conference on Computer Vision (ICCV), Kyoto, Japan, 2009.

Co-chair · Third IEEE Workshop on Non-rigid Shape Analysis and Deformable Image Alignment (NORDIA), Computer Vision and Pattern Recognition (CVPR) conference, San Francisco, USA, 2010.

Co-organizer · Mini-symposium on Computer Vision Approaches in Non-Rigid Shape Analysis, SIAM Imaging Sciences, Chicago, USA, 2010.

Co-organizer · Shape Retrieval Contest (SHREC), Eurographics, 2010.

Area chair · Asian Conference on Computer Vision (ACCV), New Zealand, 2010.

Local chair · Scale Space and Variational Methods (SSVM), Ein Gedi, Israel, 2011.

Program committee · Shape Modeling International (SMI), Herzliya, Israel, 2011.

Co-chair · Fourth IEEE Workshop on Non-rigid Shape Analysis and Deformable Image Alignment (NORDIA), Computer Vision and Pattern Recognition (CVPR) conference, Colorado Springs, USA, 2011.

Program chair · Eurographics Workshop on 3D Object Recognition (3DOR), Cagliari, Italy, 2012.

Co-chair · Fifth IEEE Workshop on Non-rigid Shape Analysis and Deformable Image Alignment (NORDIA), European Conference on Computer Vision (ECCV), Florence, Italy, 2012.

Program committee · International Workshop on Vision, Modeling, and Visualization, Lugano, Switzerland, 2013.

Chair · Workshop on Geometry Analysis and Processing Using Functional Maps, Intl. Conference on 3D Vision (3DV), Tokyo, Japan, 2014.

Co-organizer · Workshop on Theory of Deep Learning, Intl. Conference on Machine Learning (ICML), New York, 2016.

Co-organizer · Special Session on Geometry and Topology: Furthering the Reaches of Deep Learning?, Intl. Conference on Acoustics, Speech and Signal Processing (ICASSP), Calgary, 2018.

Area chair · International Conference on Computer Vision (ICCV), Seoul, Korea, 2019.

BIBLIOMETRICS *h-index:* 51 · *i10-index:* 127 · *citations:* 9698 (Google Scholar)

LANGUAGES *human:* English, Hebrew, Russian, Italian *(fluent)* · French, Spanish *(intermediate)*
machine: C, C++, C#, Python, Matlab, Verilog

HOBBIES Music (vocal and piano) · photography · long-distance running · yachting · travelling · gourmet gastronomy · general relativity and quantum field theory

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