Stanford

Leonidas Guibas

Paul Pigott Professor of Engineering and Professor, by courtesy, of Electrical Engineering

Computer Science

Curriculum Vitae available Online

CONTACT INFORMATION

- **Administrator**

  Carrie Petersen - Faculty Administrator

  Email carriep1@stanford.edu

  Tel 650-498-0615

Bio

BIO

Professor Guibas heads the Geometric Computation group in the Computer Science Department of Stanford University and is a member of the Computer Graphics and Artificial Intelligence Laboratories. He works on algorithms for sensing, modeling, reasoning, rendering, and acting on the physical world. Guibas interests span computational geometry, geometric modeling, computer graphics, computer vision, sensor networks, robotics, and discrete algorithms --- all areas in which he has published and lectured extensively. Current foci of interest include geometric modeling with point cloud data, deformations and contacts, organizing and searching libraries of 3D shapes and images, sensor networks for lightweight distributed estimation / reasoning, analysis of GPS traces and other mobility data, and modeling the shape and motion biological macromolecules and other biological structures. More theoretical work is aimed at investigating fundamental computational issues and limits in geometric computing and modeling.

ACADEMIC APPOINTMENTS

- Professor, Computer Science
- Professor (By courtesy), Electrical Engineering
- Member, Bio-X
- Faculty Affiliate, Institute for Human-Centered Artificial Intelligence (HAI)
- Member, Institute for Computational and Mathematical Engineering (ICME)
- Affiliate, Stanford Woods Institute for the Environment

HONORS AND AWARDS

- Fellow, ACM (1999)
- Allen Newell Award, ACM (2008)
- Fellow, IEEE (2011)
- Member, National Academy of Engineering (2017)
- Member, National Academy of Arts and Sciences (2018)
- Member, National Academy of Sciences (2022)

PROFESSIONAL EDUCATION

- PhD, Stanford University (1976)
- MS, California Institute of Technology (1971)
- BS, California Institute of Technology (1971)

LINKS

- http://graphics.stanford.edu/~guibas: http://graphics.stanford.edu/~guibas

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Geometric and topological data analysis and machine learning. Algorithms for the joint analysis of collections of images, 3D models, or trajectories. 3D reconstruction.

Teaching

COURSES

2025-26

- Geometric and Topological Data Analysis: CME 251, CS 233 (Spr)

2024-25

- Geometric and Topological Data Analysis: CME 251, CS 233 (Spr)
- Topics in Geometric Computing - 3D and 4D Foundation Models: CS 468 (Aut)

2023-24

- Geometric and Topological Data Analysis: CME 251, CS 233 (Win)

2022-23

- Neural Models for 3D Geometry: CS 348N (Spr)

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Yang You

Doctoral Dissertation Advisor (AC)

Yijia Weng

Doctoral Dissertation Co-Advisor (AC)

Shengqu Cai, Boyang Deng, Lei Shu

Master's Program Advisor

Jimmy Chen, Maddie Fox, Karthik Jetty

Doctoral (Program)

Hansheng Chen, Jihyeon Je, Yijia Weng, Yang Zheng

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Biomedical Data Science (Phd Program)

Publications

PUBLICATIONS

- **Learning Multiview 3D Point Cloud Registration** *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*
  Gojcic, Z., Zhou, C., Wegner, J. D., Guibas, L. J., Birdal, T.
  2020: 1756–66

- **From Planes to Corners: Multi-Purpose Primitive Detection in Unorganized 3D Point Clouds** *RA-Letters*
  Sommer, C., Sun, Y., Guibas, L. J., Cremers, D., Birdal, T.
  2020; 5: 8

- **Synchronizing Probability Measures on Rotations via Optimal Transport** *IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*
  Birdal, T., Arbel, M., Simsekli, U., Guibas, L.
  2020: 1566–76

- **Shape Matching via Quotient Spaces** *COMPUTER GRAPHICS FORUM*
  Ovsjanikov, M., Merigot, Q., Patraucean, V., Guibas, L.
  2013; 32 (5): 1-11

- **Consistent Shape Maps via Semidefinite Programming** *COMPUTER GRAPHICS FORUM*
  Huang, Q., Guibas, L.
  2013; 32 (5): 177-186

- **Dirichlet Energy for Analysis and Synthesis of Soft Maps** *COMPUTER GRAPHICS FORUM*
  Solomon, J., Guibas, L., Butscher, A.
  2013; 32 (5): 197-206

- **Map-Based Exploration of Intrinsic Shape Differences and Variability** *ACM TRANSACTIONS ON GRAPHICS*
  Rustamov, R. M., Ovsjanikov, M., Azencot, O., Ben-Chen, M., Chazal, F., Guibas, L.
  2013; 32 (4)

- **Building Markov state models with solvent dynamics** *11th Asia Pacific Bioinformatics Conference (APBC)*
  Gu, C., Chang, H., Maibaum, L., Pande, V. S., Carlsson, G. E., Guibas, L. J.
  BIOMED CENTRAL LTD.2013

- **Graph Matching with Anchor Nodes: A Learning Approach** *CVPR2013*
  Hu, N., Rustamov, Raif, M., Guibas, L.
  2013

- **Locating Lucrative Passengers for Taxicab Drivers.**
  Tang, H., Kerber, M., Huang, Q., Guibas, L.
  2013

- **Large-Scale Joint Map Matching of GPS Traces**
  Li, Y., Huang, Q., Kerber, M., Zhang, L., Guibas, L.
  2013

- **Image Co-Segmentation via Consistent Functional Maps.**
  Wang, F., Huang, Q., Guibas, L.
  2013

- **Wavelets on Graphs via Deep Learning** *NIPS*
  Rustamov, Raif, M., Guibas, L.
  2013

- **Pathlet Learning for Compressing and Planning Trajectories.**
  Chen, C., Su, H., Huang, Q., Zhang, L., Guibas, L.

2013

- **Guided Real-Time Scanning of Indoor Environments, Computer Graphics Forum**
  Kim, Y., Mitra, N., Huang, Q., Guibas, Leonidas, J.
  2013
- **Guided Real-Time Scanning of Indoor Environments** *Computer Graphics Forum, Pacific Graphics*
  Kim, Y., Mitra, N., Huang, Q., Guibas, Leonidas, J.
  2013
- **Acquiring 3D Indoor Environments with Variability and Repetition** *ACM TRANSACTIONS ON GRAPHICS*
  Kim, Y. M., Mitra, N. J., Yan, D., Guibas, L.
  2012; 31 (6)
- **Microtiles: Extracting Building Blocks from Correspondences** *COMPUTER GRAPHICS FORUM*
  Kalojanov, J., Bokeloh, M., Wand, M., Guibas, L., Seidel, H., Slusallek, P.
  2012; 31 (5): 1597-1606
- **Functional Maps: A Flexible Representation of Maps Between Shapes** *ACM TRANSACTIONS ON GRAPHICS*
  Ovsjanikov, M., Ben-Chen, M., Solomon, J., Butscher, A., Guibas, L.
  2012; 31 (4)
- **Detecting Network Cliques with Radon Basis Pursuit.**
  Jiang, X., Yao, Y., Liu, H., Guibas, L.
  2012
- **Supervised Earth Mover's Distance Learning and its Computer Vision Applications**
  Wang, F., Guibas, L.
  2012
- **Joint Shape Segmentation with Linear Programming** *ACM TRANSACTIONS ON GRAPHICS*
  Huang, Q., Koltun, V., Guibas, L.
  2011; 30 (6)
- **A Condition Number for Non-Rigid Shape Matching** *COMPUTER GRAPHICS FORUM*
  Ovsjanikov, M., Huang, Q., Guibas, L.
  2011; 30 (5): 1503-1512
- **An Optimization Approach to Improving Collections of Shape Maps** *COMPUTER GRAPHICS FORUM*
  Andy Nguyen, A., Ben-Chen, M., Welnicka, K., Ye, Y., Guibas, L.
  2011; 30 (5): 1481-1491
- **As-Killing-As-Possible Vector Fields for Planar Deformation** *COMPUTER GRAPHICS FORUM*
  Solomon, J., Ben-Chen, M., Butscher, A., Guibas, L.
  2011; 30 (5): 1543-1552
- **Probabilistic Reasoning for Assembly-Based 3D Modeling** *ACM TRANSACTIONS ON GRAPHICS*
  Chaudhuri, S., Kalogerakis, E., Guibas, L., Koltun, V.
  2011; 30 (4)
- **Exploration of Continuous Variability in Collections of 3D Shapes** *ACM TRANSACTIONS ON GRAPHICS*
  Ovsjanikov, M., Li, W., Guibas, L., Mitra, N. J.
  2011; 30 (4)
- **Discovery of Intrinsic Primitives on Triangle Meshes** *COMPUTER GRAPHICS FORUM*
  Solomon, J., Ben-Chen, M., Butscher, A., Guibas, L.
  2011; 30 (2): 365-374
- **Overcomplete Radon Bases for Target Property Management in Sensor Networks.**
  Jiang, X., Li, M., Yao, Y., Guibas, L.

2011

- **Data- driven trajectory smoothing.**
  Chazal, F., Chen, D., Guibas, L., Jiang, X., Sommer, C.
  2011
- **A Fourier-Theoretic Approach for Inferring Symmetries.**
  Jiang, X., Sun, J., Guibas, L.
  2011
- **Persistence-based clustering in riemannian manifolds.**
  Chazal, F., Guibas, Leonidas, J., Oudot, Steve, Y., Skraba, P.
  2011
- **Kinetically-aware Conformational Distances in Molecular Dynamics.**
  Gu, C., Jiang, X., Guibas, L.
  2011
- **Metric Graph Reconstruction from Noisy Data** *27th Annual ACM Symposium on Computational Geometry*
  Aanjaneya, M., Chazal, F., Chen, D., Glisse, M., Guibas, L., Morozov, D.
  ASSOC COMPUTING MACHINERY.2011: 37–46
- **Human Action Recognition by Learning Bases of Action Attributes and Parts** *IEEE International Conference on Computer Vision (ICCV)*
  Yao, B., Jiang, X., Khosla, A., Lin, A. L., Guibas, L., Li Fei-Fei, F. F.
  IEEE.2011: 1331–1338
- **Fourier-Information Duality in the Identity Management Problem** *European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases (ECML PKDD)*
  Jiang, X., Huang, J., Guibas, L.
  SPRINGER-VERLAG BERLIN.2011: 97–113
- **Network Warehouses: Efficient Information Distribution to Mobile Users** *IEEE INFOCOM Conference*
  Motskin, A., Downes, I., Kusy, B., Gnawali, O., Guibas, L.
  IEEE.2011: 2069–2077
- **Witnessed k-Distance** *27th Annual ACM Symposium on Computational Geometry*
  Guibas, L., Merigot, Q., Morozov, D.
  ASSOC COMPUTING MACHINERY.2011: 57–64
- **Geodesic Patterns** *ACM TRANSACTIONS ON GRAPHICS*
  Pottmann, H., Huang, Q., Deng, B., Schiftner, A., Kilian, M., Guibas, L., Wallner, J.
  2010; 29 (4)
- **One Point Isometric Matching with the Heat Kernel** *COMPUTER GRAPHICS FORUM*
  Ovsjanikov, M., Merigot, Q., Memoli, F., Guibas, L.
  2010; 29 (5): 1555-1564
- **On Discrete Killing Vector Fields and Patterns on Surfaces** *COMPUTER GRAPHICS FORUM*
  Ben-Chen, M., Butscher, A., Solomon, J., Guibas, L.
  2010; 29 (5): 1701-1711
- **Meshless Shape and Motion Design for Multiple Deformable Objects** *COMPUTER GRAPHICS FORUM*
  Adams, B., Wicke, M., Ovsjanikov, M., Wand, M., Seidel, H., Guibas, L. J.
  2010; 29 (1): 43-59
- **Data Stashing: Energy-Efficient Information Delivery to Mobile Sinks through Trajectory Prediction.**
  Lee, H., Wicke, M., Kusy, B., Gnawali, O., Guibas, L.
  2010
- **Persistence-based Segmentation of Deformable Shapes, 3rd Workshop on Non-Rigid Shape Analysis and Deformable Image Alignment**
  Skraba, P., Ovsjanikov, M., Chazal, F., Guibas, L.

2010

- **Kinetic Stable Delaunay Graphs.**
  Agarwal, Pankaj, K., Gao, J., Guibas, L., Kaplan, H., Koltun, V., Rubin, N.
  2010
- **Constructing Multi-Resolution Markov State Models (MSMs)to Elucidate RNA Hairpin Folding Mechanisms.**
  Huang, X., Yao, Y., Bowman, Gregory, R., Sun, J., Guibas, Leonidas, J., Carlsson, G.
  2010
- **Road Network Reconstruction for Organizing Paths** *21st Annual ACM/SIAM Symposium on Discrete Algorithms*
  Chen, D., Guibas, L. J., Hershberger, J., Sun, J.
  SIAM.2010: 1309–1320
- **Image Webs: Computing and Exploiting Connectivity in Image Collections** *23rd IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*
  Heath, K., Gelfand, N., Ovsjanikov, M., Aanjaneya, M., Guibas, L. J.
  IEEE COMPUTER SOC.2010: 3432–3439
- **Robust Single-View Geometry and Motion Reconstruction** *ACM SIGGRAPH Asia Conference 2009*
  Li, H., Adams, B., Guibas, L. J., Pauly, M.
  ASSOC COMPUTING MACHINERY.2009
- **Gromov-Hausdorff Stable Signatures for Shapes using Persistence** *7th Eurographics Symposium on Geometry Processing (SGP)*
  Chazal, F., Cohen-Steiner, D., Guibas, L. J., Memoli, F., Oudot, S. Y.
  WILEY-BLACKWELL.2009: 1393–1403
- **Manifold Reconstruction in Arbitrary Dimensions Using Witness Complexes** *23rd Annual Symposium on Computational Geometry*
  Boissonnat, J., Guibas, L. J., Oudot, S. Y.
  SPRINGER.2009: 37–70
- **A Concise and Provably Informative Multi-Scale Signature Based on Heat Diffusion** *7th Eurographics Symposium on Geometry Processing (SGP)*
  Sun, J., Ovsjanikov, M., Guibas, L.
  WILEY-BLACKWELL.2009: 1383–92
- **Topological methods for exploring low-density states in biomolecular folding pathways** *JOURNAL OF CHEMICAL PHYSICS*
  Yao, Y., Sun, J., Huang, X., Bowman, G. R., Singh, G., Lesnick, M., Guibas, L. J., Pande, V. S., Carlsson, G.
  2009; 130 (14)
- **Efficient Reconstruction of Nonrigid Shape and Motion from Real-Time 3D Scanner Data** *ACM TRANSACTIONS ON GRAPHICS*
  Wand, M., Adams, B., Ovsjanikov, M., Berner, A., Bokeloh, M., Jenke, P., Guibas, L., Seidel, H., Schilling, A.
  2009; 28 (2)
- **Shape Decomposition using Modal Analysis** *COMPUTER GRAPHICS FORUM*
  Huang, Q., Wicke, M., Adams, B., Guibas, L.
  2009; 28 (2): 407-416
- **Proximity of Persistence Modules and their Diagrams.**
  Chazal, F., Cohen-Steiner, D., Glisse, M., Guibas, L., J., Oudot, S., Y.
  2009
- **ShapeGoogle: a computer vision approach for invariant shape retrieval**
  Ovsjanikov, M., Bronstein, A., M., Bronstein, M., M., Guibas, L., J.
  2009
- **Robust Voronoi-based Curvature and Feature Estimation**
  Mérigot, Q., Ovsjanikov, M., Guibas, L.
  2009
- **Dynamic Resource Management and Matching in Sensor Networks**

Gao, J., Guibas, L., Milosavljevic, N., Zhou, D.
2009

- **Analysis of Scalar Fields over Point Cloud Data.**
Chazal, F., Guibas, L., J., Oudot, S., Y., Skraba, P.
2009

- **Lightweight Coloring and Desynchronization for Networks** *IEEE INFOCOM Conference 2009*
Motskin, A., Roughgarden, T., Skraba, P., Guibas, L.
IEEE.2009: 2383–2391

- **Predictive QoS Routing to Mobile Sinks in Wireless Sensor Networks** *8th International Symposium on Information Processing Sensor Networks*
Kusy, B., Lee, H., Wicke, M., Milosavljevic, N., Guibas, L.
IEEE.2009: 109–120

- **Interference-Aware MAC Protocol for Wireless Networks by a Game-Theoretic Approach** *IEEE INFOCOM Conference 2009*
Lee, H., Kwon, H., Motskin, A., Guibas, L.
IEEE.2009: 1854–1862

- **Reconstruction using witness complexes** *DISCRETE & COMPUTATIONAL GEOMETRY*
Guibas, L. J., Oudot, S. Y.
2008; 40 (3): 325-356

- **Discovering structural regularity in 3D geometry** *ACM SIGGRAPH Conference 2008*
Pauly, M., Mitra, N. J., Wallner, J., Pottmann, H., Guibas, L. J.
ASSOC COMPUTING MACHINERY.2008

- **Structural insight into RNA hairpin folding intermediates** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
Bowman, G. R., Huang, X., Yao, Y., Sun, J., Carlsson, G., Guibas, L. J., Pande, V. S.
2008; 130 (30): 9676-?

- **Global intrinsic symmetries of shapes** *6th Eurographics Symposium on Geometry Processing (SGP 2008)*
Ovsjanikov, M., Sun, J., Guibas, L.
WILEY-BLACKWELL.2008: 1341–48

- **Non-rigid registration under isometric deformations** *6th Eurographics Symposium on Geometry Processing (SGP 2008)*
Huang, Q., Adams, B., Wicke, M., Guibas, L. J.
WILEY-BLACKWELL.2008: 1449–57

- **Robust Extraction of 1D Skeletons from Grayscale 3D Images** *19th International Conference on Pattern Recognition (ICPR 2008)*
Antunez, E., Guibas, L.
IEEE.2008: 2112–2115

- **Localization of Mobile Users Using Trajectory Matching.**
Lee, H., Wicke, M., Kusy, B., Guibas, L.
2008

- **Enabling data interpretation through user collaboration in sensor networks**
Cho, E., Wong, K., Kusy, B., Guibas, L.
2008

- **Bounded uncertainty roadmaps for path planning.**
Guibas, L., J., Hsu, D., Kurniawati, H., Rehman, E.
2008

- **Geodesic Delaunay Triangulation and Witness Complex in the Plane.**
Gao, J., Guibas, L., Oudot, S., Wang, Y.
2008

- **The Identity Management Problem — A Short Survey.**
Guibas, Leonidas, J.

2008

- **Iso-Contour Queries and Gradient Descent with Guaranteed Delivery in Sensor Networks**
  Sarkar, R., Zhu, X., Gao, J., Guibas, Leonidas, J., Mitchell, Joseph, S. B.
  2008
- **Composable Information Gradients in Wireless Sensor Networks**
  Lin, H., Lu, M., Milosavljevic, N., Gao, J., Guibas, Leonidas, J.
  2008
- **Probabilistic Fingerprints for Shapes**
  Mitra, Niloy, J., Guibas, L., Giesen, J., Pauly, M.
  2008
- **MULTI-PERSON TRACKING FROM SPARSE 3D TRAJECTORIES IN A CAMERA SENSOR NETWORK** *2nd ACM/IEEE International Conference on Distributed Smart Cameras*
  Heath, K., Guibas, L.
  IEEE.2008: 48–56
- **On incremental rendering of silhouette maps of a polyhedral scene** *COMPUTATIONAL GEOMETRY-THEORY AND APPLICATIONS*
  Efrat, A., Guibas, L. J., Hall-Holt, O. A., Zhang, L.
  2007; 38 (3): 129-138
- **A package for exact kinetic data structures and sweepline algorithms** *COMPUTATIONAL GEOMETRY-THEORY AND APPLICATIONS*
  Russel, D., Karavelas, M. I., Guibas, L. J.
  2007; 38 (1-2): 111-127
- **Toward unsupervised segmentation of semi-rigid low-resolution molecular surfaces** *ALGORITHMICA*
  Guibas, L. J., Wang, Y.
  2007; 48 (4): 433-448
- **Persistent voids: a new structural metric for membrane fusion** *BIOINFORMATICS*
  Kasson, P. M., Zornorodian, A., Park, S., Singhal, N., Guibas, L. J., Pande, V. S.
  2007; 23 (14): 1753-1759
- **Symmetrization** *ACM SIGGRAPH 2007 Conference*
  Mitra, N. J., Guibas, L. J., Pauly, M.
  ASSOC COMPUTING MACHINERY.2007
- **Adaptively sampled particle fluids** *ACM SIGGRAPH 2007 Conference*
  Adams, B., Pauly, M., Keiser, R., Guibas, L. J.
  ASSOC COMPUTING MACHINERY.2007
- **Learning smooth shapes by probing** *21st Annual Symposium on Computational Geometry*
  Boissonnat, J., Guibas, L. J., Oudot, S.
  ELSEVIER SCIENCE BV.2007: 38–58
- **Landmark selection and greedy landmark-descent routing for sensor networks** *26th IEEE Conference on Computer Communications (INFOCOM 2007)*
  Nguyen, A., Milosavljevic, N., Fang, Q., Gao, J., Guibas, L. J.
  IEEE.2007: 661–669
- **Sparse Data Aggregation in Sensor Networks**
  Gao, J., Guibas, L., Hershberger, J., Milosavljevic, N.
  2007
- **Reconstruction of Deforming Geometry from Time-Varying Point Clouds.**
  Wand, M., Jenke, P., Huang, Q., Bokeloh, M., Guibas, L., Schilling, A.
  2007
- **Dynamic Geometry Registration.**

Mitra, Niloy, J., Floery, S., Ovsjanikov, M., Gelfand, N., Guibas, L., Pottmann, H.
2007

- **Compressed sensing and time-parallel reduced-order modeling for structural health monitoring using a DDDAS** *7th International Conference on Computational Science (ICCS 2007)*
  Cortial, J., Farhat, C., Guibas, L. J., Rajashekhar, M.
  SPRINGER-VERLAG BERLIN.2007: 1171–1179
- **FaceNet: Tracking people and acquiring canonical face images in a wireless camera sensor network** *1st ACM/IEEE International Conference on Distributed Smart Cameras (ICDSC-07)*
  Heath, K., Guibas, L.
  IEEE.2007: 112–119
- **Object tracking in the presence of occlusions via a camera network** *6th International Symposium on Information Processing Sensor Networks*
  Ercan, A. O., El Gamal, A., Guibas, L. J.
  ASSOC COMPUTING MACHINERY.2007: 509–518
- **Energy efficient intrusion detection in camera sensor networks** *3rd IEEE International Conference on Distributed Computing in Sensor Systems*
  Skraba, P., Guibas, L.
  SPRINGER-VERLAG BERLIN.2007: 309–323
- **Geometric filtering of pairwise atomic interactions applied to the design of efficient statistical potentials** *COMPUTER AIDED GEOMETRIC DESIGN*
  Zomorodian, A., Guibas, L., Koehl, P.
  2006; 23 (6): 531-544
- **Deformable spanners and applications** *20th ACM Symposium on Computational Geometry*
  Gao, J., Guibas, L. J., Nguyen, A.
  ELSEVIER SCIENCE BV.2006: 2–19
- **Partial and approximate symmetry detection for 3D geometry** *ACM TRANSACTIONS ON GRAPHICS*
  Mitra, N. J., Guibas, L. J., Pauly, M.
  2006; 25 (3): 560-568
- **Locating and bypassing holes in sensor networks** *MOBILE NETWORKS & APPLICATIONS*
  Fang, Q., Gao, J., Guibas, L. J.
  2006; 11 (2): 187-200
- **Landmark-based information storage and retrieval in sensor networks** *IEEE INFOCOM 2006 Conference/25th IEEE International Conference on Computer Communications*
  Fang, Q., Gao, J., Guibas, L. J.
  IEEE.2006: 351–361
- **Towards unsupervised segmentation of semi-rigid low-resolution molecular surfaces** *4th International Conference on Geometric Modeling and Processing (GMP 2006)*
  Wang, Y., Guibas, L. J.
  SPRINGER-VERLAG BERLIN.2006: 129–142
- **Optimal placement and selection of camera network nodes for target localization** *2nd IEEE International Conference on Distributed Computing in Sensor Systems*
  Ercan, A. O., Yang, D. B., El Gamal, A., Guibas, L. J.
  SPRINGER-VERLAG BERLIN.2006: 389–404
- **Towards a dynamic data driven system for structural and material health monitoring** *6th International Conference on Computational Science (ICCS 2006)*
  Farhat, C., Michopoulos, J. G., Chang, F. K., Guibas, L. J., Lew, A. J.
  SPRINGER-VERLAG BERLIN.2006: 456–464
- **Kinetically stable task assignment for networks of microservers** *5th International Conference on Informational Processing in Sensor Networks*
  Abrams, Z., Chen, H., Guibas, L., Liu, J., Zhao, F.
  ASSOC COMPUTING MACHINERY.2006: 93–101

- **Towards unsupervised segmentation of semi-rigid low-resolution molecular surfaces** *4th International Conference on Geometric Modeling and Processing (GMP 2006)*
  Wang, Y., Guibas, L. J.
  SPRINGER-VERLAG BERLIN.2006: 129–142
- **Optimal placement and selection of camera network nodes for target localization** *2nd IEEE International Conference on Distributed Computing in Sensor Systems*
  Ercan, A. O., Yang, D. B., El Gamal, A., Guibas, L. J.
  SPRINGER-VERLAG BERLIN.2006: 389–404
- **Efficient collision detection among moving spheres with unknown trajectories** *ALGORITHMICA*
  Kim, H. K., Guibas, L. J., Shin, S. Y.
  2005; 43 (3): 195-210
- **Automated crystallographic ligand building using the medial axis transform of an electron-density isosurface** *ACTA CRYSTALLOGRAPHICA SECTION D-BIOLOGICAL CRYSTALLOGRAPHY*
  Aishima, J., Russel, D. S., Guibas, L. J., Adams, P. D., Brunger, A. T.
  2005; 61: 1354-1363
- **Meshless animation of fracturing solids** *ACM SIGGRAPH 2005 Conference*
  Pauly, M., Keiser, R., Adams, B., Dutre, P., Gross, M., Guibas, L. J.
  ASSOC COMPUTING MACHINERY.2005: 957–64
- **Inverse kinematics in biology: The protein loop closure problem** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
  Kolodny, R., Guibas, L., Levitt, M., Koehl, P.
  2005; 24 (2-3): 151-163
- **Exploring protein folding trajectories using geometric spanners** *10th Annual Pacific Symposium on Biocomputing (PSB)*
  Russel, D., Guibas, L.
  WORLD SCIENTIFIC PUBL CO PTE LTD.2005: 40–51
- **Staying in the Middle: Exact and Approximate Medians in R1 and R2 for Moving Points**
  Agarwal, P., K., Berg, M., De, Gao, J., Guibas, Leonidas, J., Har-Peled, S.
  2005
- **Example-Based 3D Scan Completion.**
  Pauly, M., Mitra, N., J., Giesen, J., Gross, M., Guibas, L.
  2005
- **Persistence Barcodes for Shapes.** *International Journal of Shape Modeling*
  Carlsson, G., Zomorodian, A., Collins, A., Guibas, L.
  2005; 11: 149-187
- **GLIDER: Gradient Landmark-Based Distributed Routing for sensor networks** *24th Annual Joint Conference of the IEEE Computer and Communications Societies*
  Fang, Q., Gao, J., Guibas, L. J., de Silva, V., Zhang, L.
  IEEE COMPUTER SOC.2005: 339–350
- **Efficient raytracing of deforming point-sampled surfaces** *26th Annual Conference of the Eurographics-Association*
  Adams, B., Keiser, R., Pauly, M., Guibas, L. J., Gross, M., Dutre, P.
  WILEY-BLACKWELL.2005: 677–84
- **Lazy inference on object identities in wireless sensor networks** *4th International Symposium on Information Processing in Sensor Networks*
  Shin, J., Lee, N., Thrun, S., Guibas, L.
  IEEE.2005: 174–180
- **Distributed proximity maintenance in ad hoc mobile networks** *1st IEEE International Conference on Distributed Computing in Sensor Systems*
  Gao, J., Guibas, L. J., Nguyen, A.
  SPRINGER-VERLAG BERLIN.2005: 4–19

- **Geometric spanners for routing in mobile networks** *IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS*
  Gao, J., Guibas, L. J., Hershberger, J., Zhang, L., Zhu, A.
  2005; 23 (1): 174-185
- **Apply geometric duality to energy-efficient non-local phenomenon awareness using sensor networks** *IEEE WIRELESS COMMUNICATIONS*
  Liu, J., Zhao, F., Cheung, P., Guibas, L.
  2004; 11 (6): 62-68
- **A barcode shape descriptor for curve point cloud data** *COMPUTERS & GRAPHICS-UK*
  Collins, A., Zomorodian, A., Carlsson, G., Guibas, L. J.
  2004; 28 (6): 881-894
- **Estimating surface normals in noisy point cloud data** *19th ACM Symposium on Computational Geometry*
  Mitra, N. J., Nguyen, A., Guibas, L.
  WORLD SCIENTIFIC PUBL CO PTE LTD.2004: 261–76
- **Collision detection for deforming necklaces** *18th Annual Symposium on Computational Geometry*
  Agarwal, P., Guibas, L., Nguyen, A., Russel, D., Zhang, L.
  ELSEVIER SCIENCE BV.2004: 137–63
- **A probabilistic approach to inference with limited information in sensor networks** *3rd International Symposium on Information Processing in Sensor Networks*
  Biswas, R., Thrun, S., Guibas, L. J.
  ASSOC COMPUTING MACHINERY.2004: 269–276
- **Kinetic Data Structures.** *Handbook of Data Structures and Applications*
  Guibas, L.
  edited by Mehta, D., Sahni, S.
  Chapman and Hall/CRC.2004: 1
- **Modeling Motion.** *Handbook of Discrete and Computational Geometry*
  Guibas, L.
  edited by Goodman, J., O'Rourke, J.
  Chapman and Hall/CRC.2004; 2nd: 1117–1134
- **Persistence Barcodes for Shapes.**
  Carlsson, G., Zomorodian, A., Collins, A., Guibas, L.
  2004
- **Sensor Tasking for Occupancy Reasoning in a Camera Network** *IEEE/ICST 1st Workshop on Broadband Advanced Sensor Networks (BASENETS 2004).*
  Yang, D., Shin, J., Ercan, A., Guibas, L.
  2004
- **Uncertainty and Variability in Point Cloud Surface Data.**
  Pauly, M., Mitra, N., J., Guibas, L.
  2004
- **Registration of Point Cloud Data from a Geometric Optimization Perspective.**
  Mitra, N., J., Gelfand, N., Pottmann, H., Guibas, L.
  2004
- **An Empirical Comparison of Techniques for Updating Delaunay Triangulations**
  Guibas, L., Russel, D.
  2004
- **Wireless Sensor Networks: An Information Processing Approach.**
  Zhao, F., Guibas, L.
  Elsevier/Morgan-Kaufmann.2004

- **A Computational Framework for Handling Motion.** *ALENEX*
  Guibas, L., Karavelas, M., Russel, D.
  2004: 129-141
- **Quasi-Rigid Objects in Contact**
  Pauly, M., Pai, D., K., Guibas, L., J.
  2004
- **Shape Segmentation Using Local Slippage Analysis.**
  Gelfand, N., Guibas, L.
  2004
- **Robust Global Registration.**
  Gelfand, N., Mitra, N., Guibas, L., Pottmann, H.
  2004
- **RoamHBA: Maintaining group connectivity in sensor networks** *3rd International Symposium on Information Processing in Sensor Networks*
  Fang, Q., Liu, J., Guibas, L., Zhao, F.
  ASSOC COMPUTING MACHINERY.2004: 151–160
- **Fractionally cascaded information in a sensor network** *3rd International Symposium on Information Processing in Sensor Networks*
  Gao, J., Guibas, L. J., Hershberger, J., Zhang, L.
  ASSOC COMPUTING MACHINERY.2004: 311–319
- **Locating and bypassing routing holes in sensor networks** *23rd Annual Joint Conference of the IEEE Computer and Communications Societies*
  Fang, Q., Gao, H., Guibas, L. J.
  IEEE.2004: 2458–2468
- **Collaborative signal and information processing: An information-directed approach** *PROCEEDINGS OF THE IEEE*
  Zhao, F., Liu, J., Liu, J., Guibas, L., Reich, J.
  2003; 91 (8): 1199-1209
- **Discrete mobile Centers** *17th Annual Symposium on Computational Geometry*
  Gao, J., Guibas, L. J., Hershberger, J., Zhang, L., Zhu, A.
  SPRINGER.2003: 45–63
- **Counting people in crowds with a real-time network of simple image sensors** *9th IEEE International Conference on Computer Vision*
  Yang, D. B., Gonzalez-Banos, H. H., Guibas, L. J.
  IEEE COMPUTER SOC.2003: 122–129
- **Distributed Algorithm for Managing Multi-Target Identities in Wireless Ad-hoc Sensor Networks.** *2nd Int'l Workshop on Information Processing in Sensor Networks (IPSN) 2003*
  Shin, J., Guibas, L., Zhao, F.
  2003: 223-238
- **Lightweight Sensing and Communication Protocols for Target Enumeration and Aggregation**
  Fang, Q., Zhao, F., Guibas, L.
  2003
- **Multiple-target tracking and identity management** *2nd IEEE International Conference on Sensors*
  Hwang, I., Balakrishnan, H., Roy, K., Shin, J., Guibas, L., Tomlin, C.
  IEEE.2003: 36–41
- **Zonotopes as bounding volumes** *14th Annual ACM-SIAM Symposium on Discrete Algorithms*
  Guibas, L. J., Nguyen, A., Zhang, L.
  SIAM.2003: 803–812
- **Small libraries of protein fragments model native protein structures accurately** *JOURNAL OF MOLECULAR BIOLOGY*
  Kolodny, R., Koehl, P., Guibas, L., Levitt, M.
  2002; 323 (2): 297-307

- **Sensing, tracking, and reasoning with relations** *IEEE SIGNAL PROCESSING MAGAZINE*
  Guibas, L. J.
  2002; 19 (2): 73-85
- **Approximate Map Matching with respect to the Fréchet Distance**
  Chen, D., Driemel, A., Guibas, L., Nguyen, A., Wenk, C.
- **Fine-Grained Semi-Supervised Labeling of Large Shape Collections** *ACM Transactions on Graphics (SIGGRAPH Asia 2013)*
  Huang, Q., Su, H., Guibas, L.
  ; 6 (32)