

Curriculum Vitae

Leo Joskowicz

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Research Interests

- **Computer-aided surgery and medical image processing:** medical image segmentation and modeling, multimodality registration, surgical navigation, medical robotics, with emphasis on radiology, orthopaedics, and neurosurgery.
- **Computer-aided mechanical design and computational geometry:** geometric reasoning, analysis, design, and tolerancing, assembly planning and validation, the configuration space method, geometric uncertainty.

Education

- 1984-1988 PhD, Courant Institute of Mathematical Science, Computer Science Department, New York University, USA. Advisor: Prof. E. Davis.
- 1983-1984 MSc, Courant Institute of Mathematical Science, Computer Science Department, New York University, USA. Advisor: Prof. M.C. Harrison.
- 1978-1983 BSc, Computer Science Department, Technion, Israel Institute of Technology, Haifa, Israel.
- 1965-1978 Diplome Baccalauréat Série E, Lycée Franco-Mexicain, Mexico City.

Honors and Awards (selected)

- Elected Fellow, MICCAI – Medical Image Computing and Computer Aided Interventions Society, 2017.
- Elected Fellow, IEEE – Institute for Electric and Electronic Engineers, 2013.
- Elected Fellow, ASME – American Society of Mechanical Engineers, 2012.
- M.E. Müller Award for Excellence in Computer Assisted Surgery, 2010.
- Kaye Innovation Award, The Hebrew University of Jerusalem, June 2007.

Employment

- 10/06 - Professor, School of Computer Science and Eng., Hebrew University.
- 07/10 - Member, Edmond and Lily Safra Center for Brain Sciences, Hebrew University.
- 10/01 - 02/09 Director, Leibniz Center for Research in Computer Science, Hebrew University. Elected for three consecutive three-year periods.
- 10/00 - 10/06 Associate Professor, School of Computer Science, Hebrew University.
- 10/95 - 10/00 Senior Lecturer, Institute of Computer Science and Eng., Hebrew University. Founder, Computer-Aided Surgery and Medical Image Processing Laboratory.
- 04/14 – 03/16 Visiting Professor, Chiba University, Japan.
- Summer 06-16 Visiting Professor, Instituto de Matemáticas, Universidad Nacional Autónoma de México (UNAM).
- Summer 96-10 Visiting Professor, Instituto Tecnológico Autonomo de Mexico (ITAM).
- September 07 Visiting Professor, Hospital for Special Surgery, Cornell U., New York, USA.
- Summer 06 Visiting Professor, School of Medicine, Universidad Panamericana, Mexico.
- Summer 97 Visiting Professor, Instituto de Investigaciones en Matemáticas Aplicadas y en Sistemas (IIMAS), Universidad Nacional Autónoma de México (UNAM).
- 9/94 - 10/95 Project Leader, Computer-Assisted Surgery group: Modeling and Registration. IBM T.J. Watson Research Center, Yorktown Heights, New York, USA.
- 10/88 - 3/93 Research Staff Member, Computer-Assisted Surgery group, IBM Research. Research Staff Member, Artificial Intelligence Department, IBM Research.
- 9/84 - 7/88 Research and Teaching Assistant, Courant Institute, New York University.
- 1/83 - 7/83 Programmer, Advanced Automated Applications, Haifa, Israel.

Grants

- G1. *Impaired language subsequent to stroke: new tools for a large-scale investigation of structure-function relations in the language domain* with Y. Grodzinsky, Y. Loewenstein, and R. Eichel. Edmond and Lily Safra Center for Brain Sciences Grant, \$100,000, 2019-2020.
- G2. *Fetal MRI based package for expert quantitative assessment of fetal development* with Prof. D. Ben Bashat, Tel Aviv Sourasky Medical Center. Israel Ministry of Trade and Industry, KAMIN Grant , \$375,000, 2018-20.
- G3. *Automated quantitative personalized patient radiological follow-up with model-based and deep learning radiomics*, Hebrew University Grant on Personalized Medicine, \$53,000, 2018-19.
- G4. *New method for imageless needle and patient tracking in interventional CT procedures* Israel Ministry of Trade and Industry, KAMIN Grant 57706, \$200,000, 2016-18.
- G5. *METASEG: a new medical image segmentation paradigm for clinical decision support and big data radiology*. Israel Ministry of Science, Technology and Space, Grant 53681, \$350,000, 2016-2019.

- G6. *CRYOPLAN: adaptive multi-needle cryoablation planning for percutaneous image-guided liver and kidney interventions.* Mamonide France-Israel Research in Biomedical Robotics, EU 80,000, 2016-2018.
- G7. *Imageless needle tracking in interventional CT procedures.* Mobileye Applied Computer Science Grant, \$20,000, 2016-2018.
- G8. *SAMIR: Towards content-based medical image analysis and retrieval for big data radiology.* Oppenheimer Applied Research Grant, The Hebrew University, \$25,000, 2015-16.
- G9. *New method for online radiation dose optimization in repeat CT scanning.* Israel Ministry of Trade and Industry, KAMIN Grant 52643, \$200,000, 2014-16.
- G10. *Computational intelligence for radiology and surgery.* Israel Ministry of Science, Technology and Space - Knowledge Center in Machine Learning and Artificial Intelligence, \$75,000 out of \$750,000, 2013-2016.
- G11. *Fast MRI scanning based on previous scans.* Alexander Silberman Applied Research Grant, The Hebrew University, \$25,000, 2013-14.
- G12. *Safe insertion trajectory planning in minimally invasive keyhole neurosurgery.* Julius and Fannie Rogoff Applied Research Grant, The Hebrew University, \$40,000, 2012-13.
- G13. *Computer-based tumors analysis and follow-up in radiological oncology studies.* Israel Ministry of Trade and Industry, KAMIN Grant 46217, \$200,000, 2011-13.
- G14. *ACTIVE: active constraints technologies for ill-defined or volatile environments.* 7th Framework Program, European Union, contract FP7-ICT-270461. Consortium of 10 universities and 2 companies in Italy, Germany, UK, and Israel, EU 125,000 out 3,500,000, 2010-15.
- G15. *A generic framework for the automatic generation of digital patient-specific models.* Applied Research Grant, The Hebrew University, \$40,000, 2010-11.
- G16. *Computer-based quantitative patient-specific integrated femoral fracture fixation assessment.* Johnson and Johnson and Julius Oppenheimer Endowment Fund for Applied Research (with M. Liebergall and R. Mosheiff, Dept. of Orthopaedic Surgery, Hadassah), \$60,000, 2009-10.
- G17. *ROBOCAST: Robot and sensor integration as guidance for enhanced computer-assisted surgery and therapy.* 7th Framework Program, European Union, contract FP7-ICT-215190. Consortium of 8 universities and 2 companies in Italy, Germany, UK, and Israel, EU 205,000 out of EU 4,500,000, 2008-10.
- G18. *Patient-specific preoperative simulation of endovascular surgical procedures.* Israel Ministry of Trade and Industry, MAGNETON Grant 38652 (with Simbionix Ltd. and J. Sosna, Dept of Radiology, Hadassah) \$295,000 out of \$795,000, 2007-09.
- G19. *Computer-aided intraoperative fracture reduction and fixation based on electromagnetic tracking.* Innovation Grant, The Hebrew University (with M. Liebergall), \$15,000, 2006-07.
- G20. *Navigated minimally invasive two-incision vs. non-navigated mini posterior approaches to total hip arthroplasty: comparative study.* The Joint Research Fund of the Hebrew University (with Y. Weill, M. Liebergall, Dept. of Orthopaedic Surgery, Hadassah) \$15,000, 2005-06.

- G21. *Image-guided system with a miniature robot for precise positioning and targeting in neurosurgery.* Ministry of Trade and Industry, MAGNETON Grant 37895 (with Mazor Surgical Technologies Ltd.), \$165,00 out of \$480,000, 2004-06.
- G22. *Computer-aided image guidance and precise targeting in orthopaedic surgery.* Robert Szold Fund, Applied Research Grant, The Hebrew University (with M. Liebergall, Dept. of Orthopaedic Surgery, Hadassah), \$22,000, 2003-04.
- G23. *Fundamentals of virtual reality and medical applications.* Ministry of Science (with D. Lischinsky, Hebrew U.), \$125,000 out of \$1,500,000, 2002-05.
- G24. *Vision based active robot navigation.* Ministry of Science (with I. Shimshoni, Technion, and R. Basri, Weizmann Institute), \$70,000 out of \$300,000, 2000-03.
- G25. *Image-guided robot for minimally invasive surgery.* Ministry of Science, Strategic Infrastructure Grant (with M. Shoham, Technion), \$100,000 out of \$200,000, 1999-2001.
- G26. *Registration technology for real-time imaging and tracking.* Ministry of Industry and Trade – IZMEL Consortium on Image-Guided Therapy (with DenX Ltd), \$650,000 out of \$3,000,000, 1998-2003.
- G27. *Augmented surgery.* Ministry of Industry and Trade – IZMEL Consortium on Image-Guided Therapy (with Odin, Envision, and Biomedicom Ltd), \$350,000 out of \$3,000,000, 1998-2003.
- G28. *A computer-integrated system for image-guided bone fracture surgery.* Hadassit Grant – Hadassah Medical Organization (with C. Milgrom, Hadassah), \$56,700, 1999-2000.
- G29. *Computer-aided contact analysis and mechanical system design using configuration spaces.* Israel Academy of Sciences (with E. Sacks, Purdue U.), Grant 98/536, \$ 120,000 out of \$130,500, 1998-2001.
- G30. *Automatic allocation of functional tolerances and quantification of robustness* Ford Univ. Research Grant (with E. Sacks, Purdue U.), \$100,000 out of \$200,000, 1998-2000.
- G31. *Real-time three-dimensional motion tracking and measurement system.* Equipment Grant 9061/98, Israel Academy of Sciences, \$50,000,1998.
- G32. *Computational kinematics.* Authority for Research and Development, The Hebrew University, \$17,000, 1997-1998.
- G33. *Medical imaging.* Silicon Graphics Biomedical Ltd, Israel, \$18,000, 1996-1997.
- G34. Guastalla Faculty Fellowship, Israel, \$100,000, 1995-1998.

Editorial Boards

1. Deputy Editor, *International Journal of Computer Assisted Radiology and Surgery*, Elsevier, since its inception in 2006.
2. Associate Editor, *IEEE Trans. Automation Science and Engineering*, IEEE Press, since 2010.
3. Member, Editorial Board, *Nature Scientific Reports*, since 2017.
4. Member, Editorial Board, *Medical Image Analysis*, Elsevier, since 2000.

5. Member, Editorial Board, *Computer Methods in Biomechanics and Biomedical Engineering: Imaging and Visualization*, since 2014.
6. Member, Editorial Board, *Journal of Computational Design and Engineering*, Elsevier, since 2015.
7. Member, Editorial Board, *Advanced Engineering Informatics* (formerly *Artificial Intelligence in Engineering*, Elsevier), since 1992.
8. Member, Editorial Board, *Computer-Aided Surgery* (Robotics and Instrumentation), Wiley, Francis and Taylor, Informa, since 1997.
9. Associate Editor, *ASME Journal of Computing and Information Science in Engineering*, ASME Press, 2005-09.

Recent Professional Activities

- Elected President, MICCAI Society, 2019-2022.
- General Co-chair, *22th Int. Conf. on Medical Image Computing and Computer Assisted Interventions*, Lima, Peru, 2020.
- Organizing Committee Member, *IEEE International Workshop on Robotic Medical Devices and Semantic Systems*, Taichung, Taiwan, Apr 10-12, 2017.
- Scientific committee member, *MICCAI 2017 and 2018 Workshops on Bio-Imaging and Visualization for Patient-Customized Simulations*, Quebec, Canada 2017, Granada Spain 2018.
- Program Co-Chair, *18th Int. Conf. on Medical Image Computing and Computer Assisted Interventions*, Athens, Greece, 2016.
- Member, Program Committee, *7th Int. Conf. on Medical Imaging and Augmented Reality*, Bern, Switzerland, 2016.
- Co-founder and Chair, *1st Israeli Symp. on Computational Radiology*, Tel-Aviv, Israel, 2015.
- Member, Board of Directors, *Medical Image Computing and Computer Aided Surgery Society*, MICCAI Society, Elected 2015-19.
- Vice-President, *29th Int. Congress on Computer Assisted Radiology and Surgery*, Barcelona, Spain, 2015.
- Advisory Board Member, *2nd Int. Workshop on Computer-Assisted and Robotic Endoscopy*, MICCAI 2015, Munich Germany, 2015.
- Co-organizer, *1st Israeli Symposium on Computational Radiology*, Tel-Aviv, 2016.
- Secretary General, *Int. Society for Computer-Aided Surgery*, ISCAS, Elected 2014.
- Secretary General, *Int. Society for Computer-Aided Orthopaedic Surgery*, CAOS-International, Elected 2007-13.
- Member, Executive Board, *Int. Society for Computer-Aided Surgery*, ISCAS. Elected, since 2002.

- Member, Organizing Committee, *Int. Congress on Computer Assisted Radiology and Surgery*, CARS 2007-18.
- Member, Program Committee, *14-30th Int. Congress on Computer Assisted Radiology and Surgery*, CARS 2000-18.
- Member, Program Committee, *1-17th Int. Conf. on Medical Image Computing and Computer Assisted Interventions*, MICCAI 1998-2018.
- Member, Program Review Committee, *Int. Conf. on Computer-Aided Orthopaedic Surgery*, CAOS 2004-18.
- Member, Program committee, *Int. Congress on Cardiovascular Technologies*, 2013-16.
- Founding Member and Steering Committee Member, *1-6 Int. Conf. on Information Processing in Computer-Assisted Interventions*, IPCAI, 2010-2017.
- Member, Program Committee, *1-11th Hamlyn Symposium on Medical Robotics*, London, UK, 2009-18.
- Member, Program Committee, *2nd MICCAI Workshop on Deep Brain Stimulation Methodological Challenges*, Sept 18 2014, Boston, USA.
- Program co-chair, *3rd Int. Conf. on Information Processing in Computer-Assisted Interventions*, IPCAI 2012.
- Member, Program Committee, *ACM Int. Symp. on Solid and Physical Modeling*, Haifa, Israel and Dijon, France, 2012.
- Co-organizer, *MICCAI Workshop on Deep Brain Stimulation Methodological Challenges*, Oct 1, 2012, Nice, France.
- Member, Program Committee, *MICCAI Workshop on Interdisciplinary Clinical Software Support*, Oct 1, 2012, Nice, France.
- Member, Organizing Committee, *23rd Conf. of the Society for Medical Innovation and Technology*, Tel-Aviv, Israel, Sept 13-16, 2011.
- Member, Program Review Committee, *IEEE Int. Symposium on Biomedical Imaging*, Chicago, USA, April 3-10, 2011.
- Member, Program Committee, *SIAM/ACM Joint Conference on Geometric and Physical Modeling*, Orlando, USA, Oct. 24-27, 2011.
- Member, Executive and Program Committee, *Int. Conf. on Information Processing in Computer-Assisted Interventions (IPCAI)*, 2010-11.
- Co-chair and co-founder, *1-18th Israeli Symposium Computer-Aided Surgery, Medical Robotics, and Medical Imaging*, ISRACAS 1998-2016, Israel.
- Co-chair and co-founder, *1-17th Mexican Symposium on Computer Aided Surgery, Medical Image Processing, and Medical Robotics*, Mexico, 2000-16.

Theses (T)

- T1. Guy Medan, PhD, 2019. *Reduced-dose rigid registration in 3D Radon space for repeat CT procedures.*
- T2. Michael Braginsky, MSc, 2019. *Interactive segmentation using real-time fine-tuning of a Fully Convolutional Network.*
- T3. Oren Shauly, MSc, 2018. *Segmentation and modeling of parotid salivary ductal systems in Sialo-CBCT.*
- T4. Zeev Adelman, MSc, 2018. *Reduced-dose region-of-interest image reconstruction in repeat CT scanning.*
- T5. Yigal Shenkman, MSc, 2018. *Automatic detection and diagnosis of sacroiliitis in CT scans as incidental findings.*
- T6. Ilia Marek, MSc, 2018. *Computer-based radiological longitudinal evaluation of vestibular schwannomas after stereotactic radiosurgery.*
- T7. Refael Vivanti, PhD, 2018. *Automatic liver and lungs tumors detection, segmentation, and tumor burden quantification in longitudinal CT scans.*
- T8. Assaf Spanier, PhD, 2018. *Structure-specific automatic multi-parametric medical image analysis and retrieval*
- T9. Dror Cohen, MSc, 2017. *Segmentation variability estimation in medical image processing: framework, method and study*
- T10. Achia Kronman, PhD, 2017. *Detection, correction and minimization of segmentation errors in volumetric medical images.*
- T11. Amitay Nachmani, MSc, 2016. *The effect of interpolation on contrast and model fitting in quantitative MRI* (co-advisor with Dr. A. Mezer).
- T12. Or Bartal, MSc, 2015. *Euclidean minimum spanning tree with dependent uncertainties.*
- T13. Ilya Kovler, MSc, 2014. *Haptic 3D virtual bone model manipulation in orthopaedics.*
- T14. Lior Weizman, PhD, 2013. *Automatic methods for tumor segmentation and follow-up in MR images.*
- T15. Yonatan Myers, PhD, 2013. *Geometric uncertainty with dependencies.*
- T16. Miri Trope, MSc, 2013. *Planning safe trajectories in image-guided keyhole neurosurgery.*
- T17. Dina Helfer, MSc, 2012. *Fast sem-automatic Plexiform Neurofibroma tumor segmentation in MRI scans.*
- T18. Yehonathan Sela, MSc, 2011. *fMRI-based detection and classification of liver diseases using mice models.*
- T19. Refael Vivanti, MSc, 2011. *Modeling and preoperative planning for kidney surgery.*

- T20. Moti Freiman, PhD, 2010. *Shape constraint optimization for medical image segmentation and registration.*
- T21. Ruby Shamir, PhD, 2010. *Improving accuracy and safety in image-guided keyhole neurosurgery.*
- T22. Eran Peleg, PhD, 2009 (co-advisor). *Patient-specific quantitative analysis of bone fracture fixations.*
- T23. Gurion Rivkin, MD, 2009 (co-advisor). *Evaluation of intertrochanteric femur fracture fixation using a finite element model.*
- T24. Miriam Natanzon, MSc, 2009. *Nearly automatic liver vessels segmentation of CTA patient scans.*
- T25. Noah Broide, MSc, 2009. *A graph-based approach to carotid arteries CTA patient-specific segmentation.*
- T26. Yoav Taieb, MSc, 2009. *An iterative Bayesian method for liver tumors segmentation.*
- T27. Ofer Elisassaf, MSc, 2009. *Nearly automatic liver contour segmentation.*
- T28. Aviv Hurvitz, MSc, 2008. *Registration of a CT-like atlas to fluoroscopic X-ray images using intensity correspondences.*
- T29. Yair Yarom, MSc, 2008. *Electromagnetic tracing in a fluoroscopy-based orthopaedic surgical environment.*
- T30. Pavel Katz, MSc, 2006. *Liver tumor segmentation and volume computation with user-guided 3D active contours.*
- T31. Yaron Ostrovsky-Berman, PhD, 2005. *Shape and position uncertainty in mechanical assemblies.*
- T32. Ruby Shamir, MSc. 2005. *Miniature robot system for keyhole neurosurgery.*
- T33. Moti Freiman, MSc. 2005. *Three-way registration for robot-assisted image-guided targeting for minimally invasive neurosurgery.*
- T34. Ziv Yaniv, PhD. 2004. *Fluoroscopic X-ray image guidance for manual and robotic surgery.*
- T35. Yoram Weil, MD, 2004 (co-advisor). *Percutaneous compression plate for the fixation of intertrochanteric fractures using a computerized fluoroscopic navigation system.*
- T36. Dotan Knaan, MSc. 2003. *Intensity-based 2D/3D rigid registration of fluoroscopic X-ray to CT.*
- T37. Harel Lyviatan, MSc. 2003. Rector Honors List. *Gradient-based 2D/3D rigid registration of fluoroscopic X-ray to CT.*
- T38. Moti Melloul, MSc. 2001. *Segmentation of microcalcifications in X-ray mammograms using entropy thresholding.*
- T39. Ofri Sadowsky, MSc. 2001. *Contact and image-based rigid registration in computer-assisted surgery: materials, methods, and experimental results.*

- T40. Ziv Yaniv, MSc. 1998. *Fluoroscopic image processing and registration for computer-aided orthopaedic surgery.*
- T41. Yoav Lasovsky, MSc. 1998. *Approximate motion planning in planar geometrically complex situations.*
- T42. Lana Tockus, MSc. 1997. *A system for computer-aided fluoroscopic image-guided bone fracture surgery.*

External PhD theses committees (last 5 years)

1. *Fady Massarwi*, PhD, Technion, Fac. of Computer Science (Prof. G. Elber), 2018.
2. *Celine Fouard*, U. of Grenoble, Habilitation a Diriger des Recherches, 2018.
3. *Avraham Cohen*, PhD, Technion, Fac. of Mechanical Engineering (Prof. M. Shoham), 2018.
4. *Karin Correa Arana*. U. del Cauca, Fac. of Engineering (Prof. O. Vivas), Colombia, 2018.
5. *Nicolas Padoy*, U. of Strasbourg, France, Habilitation a diriger des recherches, 2018.
6. *Michael Green*, PhD, U. of Tel Aviv, Israel (Prof. N. Kiryati), 2017.
7. *Oussama Haddad*, PhD, U. of Bretagne Occidentale, France (Prof. E. Stindel), 2017.
8. *Hadas Ziso*, PhD, Technion, Fac. of Mechanical Engineering (Prof. M. Shoham), 2017.
9. *Noura Hamz*, PhD, U. de Strasbourg, France (Prof. C. Essert), 2016.
10. *Ouriel Barzilay*, PhD, Technion, Fac. of Mechanical Engineering (Prof. A. Wolf), 2016.
11. *Carlos Jesus Perez del Pulgar Mancebo*, PhD, Universidad de Malaga (Prof. V. Munoz Martinez), 2016.
12. *Yechiel Lamash*, PhD, Technion, Fac. of Mechanical Engineering (Prof. A. Fischer), 2014.
13. *Bogdan Maris*, PhD, Univ. Verona, Italy, (Prof. P. Fiorini), 2014.
14. *Abtin Rasoulin*, PhD, U. of British Columbia, Canada (Prof. P. Abolmaesumi), 2013.

Publications — Leo Joskowicz

Book

1. *The configuration space method for kinematic design of mechanisms*. E. Sacks and **L. Joskowicz**. Monograph, The MIT Press, ISBN 978-0-262-01389-5, April 2010.

Book chapters (B)

- B1. Treatment planning. C. Essert, **L. Joskowicz**. *Handbook of Medical Image Computing and Computer Aided Interventions*, K. Zhou, G. Fichtinger, S. Rueckert eds, Springer. To appear, 2019.
- B2. Computer Aided Orthopaedic Surgery: incremental shift or paradigm change? **L. Joskowicz** and Eric J. Hazan. *Intelligent Orthopaedics*, G. Zheng and W. Tan Eds, Springer Nature series in Advances in Experimental Medicine and Biology, pp 21-30, 2018.
- B3. Future perspectives on statistical shape models in computer aided orthopaedic surgery. **L. Joskowicz**. Book chapter in: *Computer assisted orthopaedic surgery for hip and knee*, Sugano N. (Eds), Springer, pp 199-206, 2018.
- B4. Automatic atlas-free multiorgan segmentation of contrast-enhanced CT scans. A. Spanier, **L. Joskowicz**. In *Cloud-Based Benchmarking of Medical Image Analysis*, A. Hanbury, H. Mller G. Langs editors, Springer, pp 145-164, 2017.
- B5. Modeling and simulation. **L. Joskowicz**. In *Intraoperative Imaging and Image-Guided Therapy*, F.A Jolesz editor, Springer Science pp 49-62, 2014.
- B6. Computer-aided orthopaedic surgery in skeletal trauma, M. Liebergall, **L. Joskowicz**, R. Mosheiff, *Rockwood and Green's Fractures in Adults, 6th Edition*, R. Bucholz and J. Heckman editors, Lippincott Williams and Wilkins, Vol 1, pp 739–770, 2006. Revised 7th Ed., 2009; 8th Ed., 2015 pp 575–607.
- B7. Principles of computer-aided surgery in trauma surgery, Y. Weill, **L. Joskowicz**, R. Mosheiff, M. Liebergall, *Navigation and minimally invasive surgery in orthopaedic surgery*, Stiehl, Konermann, et al, Springer Verlag, pp 484-494, 2006.
- B8. Computer-assisted image-guided intramedullary nailing surgery of femoral fractures (in French), **L. Joskowicz** and E. Hazan, *Monographie des Conférences d'Enseignement de la SOFTCOT*, P. Merloz Editor, Elsevier, Vol. 80: pp. 156-167, 2003.
- B9. Computer-integrated surgery and medical robotics, R.H. Taylor and **L. Joskowicz**, *Standard Handbook of Biomedical Engineering and Design*, 1st Edition, M. Kutz, Editor, McGraw-Hill Professional, pp. 29.1-29.35, ISBN: 0071356371, 2002. Revised 2nd Edition, 2009.
- B10. Kinematic synthesis, M. McCarthy and **L. Joskowicz**, in *Formal Engineering Design Synthesis*, E.K. Antonsson and J. Cagan editors, Cambridge University Press, pp. 321-362, 2001.

Refereed journal papers (J)

- J1. The Liver Tumor Segmentation Benchmark (LiTS). P. Bilic, P.F Christ, ... **L. Joskowicz**, ..., B. Menze (59 authors). arXiv:1901.04056v1 [cs.CV] 13 Jan 2019.
- J2. Flexible needle and patient tracking using fractional scanning for reduced dose in interventional CT procedures. G. Medan, **L. Joskowicz**. To appear, *Int. J. Comp. Radiology and Surgery*, 2019.
- J3. The effect of motion correction interpolation on quantitative T1 mapping with MRI. A. Nachmani, R. Schurr, **Leo Joskowicz**, A.A. Mezer. *Medical Image Processing* 52:119-127, 2019.
- J4. Automatic segmentation variability estimation with segmentation priors. **L. Joskowicz**, D. Cohen, N. Caplan, J. Sosna. *Medical Image Processing* 50:54-64, 2018.
- J5. Inter-observer variability of manual contour delineation of structures in CT. **L. Joskowicz**, D. Cohen, N. Caplan, J. Sosna. *European Radiology*. Published online Sept 9, 2018.
- J6. Patient-specific Convolutional Neural Networks for robust automatic liver tumor delineation in longitudinal CT studies. R. Vivanti, **L. Joskowicz**, A. Ephrat, N. Lev-Cohain, J. Sosna. *Medical and Biological Engineering and Computing* 56(9): 1699-1713, 2018.
- J7. A fully automatic end-to-end method for content-based image retrieval of CT scans with similar liver lesion annotations. A. Spanier, N. Caplan, J. Sosna B. Acar, **L. Joskowicz**. *Int. J. of Computer Aided Surgery and Radiology* 13(1):165-174, 2018.
- J8. Computer-based radiological longitudinal evaluation of meningiomas following stereotactic radiosurgery. E. Ben Shimol, **L. Joskowicz**, R. Eliahou, Y. Shoshan. *Int. J. of Computer Aided Surgery and Radiology* 13(2):215–228, 2018.
- J9. RobustSeed: seed-based segmentation improvement by optimization. A. Kronman, **L. Joskowicz**. *Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization Medical & Biological Engineering & Computing* 6(5):564–572, 2018.
- J10. Automatic volumetric measurements of the fetal brain based on MRI: new reference data. D. Link, M.B. Braginsky, **L. Joskowicz**, L. Ben Sira, S. Harel, A. Many, R. Tarrasch, G. Malinger, M. Artzi, K. Cassandra, E. Miller, D. Ben Bashat. *Fetal Diagnosis and Therapy* 43 (2), 113–122, 2018.
- J11. Radon space dose optimization in repeat CT scanning. N. Shamul, **L. Joskowicz**. *IEEE Trans. Medical Imaging* 36(12):2436-2448, 2017.
- J12. Reduced-dose imageless needle and patient tracking in interventional CT procedures. G. Medan, **L. Joskowicz**. *IEEE Trans. Medical Imaging* 36(12):2449-2456, 2017.
- J13. Automatic detection of new tumors and tumor burden evaluation in longitudinal liver CT scan studies. R. Vivanti, A. Szeskin, **L. Joskowicz**, N. Lev-Cohain, J. Sosna. *Int. J. of Computer-Aided Radiology and Surgery* 12(11):1945-1957, 2017.
- J14. Accuracy of computer-aided techniques in orthopaedic surgery: how can it be defined, measured experimentally, and analyzed from a clinical perspective. O. Cartiaux, J.Y. Jenny, **L. Joskowicz**. *J. of Bone and Joint Surgery* 99-A(8):e39(1-8), 2017.

- J15. Computer aided surgery meets predictive preventive and personalized medicine. **L. Joskowicz**, *EPMA Journal*, Journal of the European Association of Predictive, Preventive and Personalized Medicine 8(1):1-4, 2017.
- J16. A new method for the automatic retrieval of medical cases based on the RadLex ontology. A.B. Spanier, D. Cohen, **L. Joskowicz**. *Int. J. of Computer Aided Radiology and Surgery* 12:471484, 2017.
- J17. Sparse 3D Radon space rigid registration of CT scans: method and validation study. G. Medan, N. Shamul, **L. Joskowicz**. *IEEE Trans. Medical Imaging* 36(2):497-506, 2017.
- J18. Three-dimensional analysis of acute scaphoid fracture displacement. Y. Schwarcz, Y. Schwarcz, E. Peleg, **L. Joskowicz**, R. Wollstein, S. Luria. *J. of Bone and Joint Surgery* 99:141-9, 2017.
- J19. Current state of computer navigation and robotics in unicompartamental and total knee arthroplasty: a systematic review with meta-analysis, J.P. van der List, H. Chawla, **L. Joskowicz**, A.D. Pearle. *Knee Surgery, Sports Traumatology, Arthroscopy*, 24(11):3482-3495, 2016.
- J20. Computer Aided Orthopaedic Surgery: incremental shift or paradigm change? **L. Joskowicz**, E. Hazan. *Medical Image Analysis*, 20th Anniversary Issue, 33:84-90, 2016.
- J21. The influence of varying the number of characters per row on the accuracy and reproducibility of the ETDRS visual acuity chart. R.R. Shamir, Y.G. Friedman, **L. Joskowicz**, E.Z. Blumenthal. *Graefe's Archive for Clinical and Experimental Ophthalmology* 254(5):971-6, 2016.
- J22. Snellen and ETDRS charts compared using a computer simulation. R.R. Shamir, Y. Friedman, **L. Joskowicz**, M. Mimouni, E.Z Blumenthal. *Int. J. Ophthalmology* 9(1):119-23, 2016.
- J23. Detection and correction of volumetric medical image segmentation errors by 3D-ray casting and Laplace deformation. A. Kronman and **L. Joskowicz**, *Int. J. Computer Aided Radiology and Surgery*, 11(3): 369-380, 2016.
- J24. The effect of chemotherapy on optic pathway gliomas and their sub components: a volumetric MR analysis study. B. Shofty, L. Weizman, **L. Joskowicz**, L. Pratt, R. Dvir, L. Ravid, D. Ben Bashat, M. Ilon, A. Kessler, *Pediatric Blood and Cancer*, 62(8):1353-9, 2015.
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- E4. Co-editor, *Proc. Medical Image Computing and Computer Aided Interventions*. S. Ourselin, **L. Juskowicz**, M. Sabuncu, G. Unal, W. Wells Eds. Lecture Notes in Computer Science, Springer, LNCS 9901-03, 2016.
- E5. Co-editor, *Computer Assisted Tools for Medical Robotics*. J.M. Sabater-Navarro, N. Garcia-Aracil, D. Accoto, **L. Juskowicz**. Editorial and Special issue, *Computer Methods and Programs in Biomedicine*, Vol 112(2):237-238, 2013.
- E6. Co-editor, *Proc. 3rd Int Conf. on Information Processing in Computer Assisted Interventions*, IPCAI 2012, Pisa, Italy. Lecture Notes in Computer Science Vol. 7330, P. Abolmaesumi, **L. Juskowicz**, N. Navab, P. Jannin, Eds. 180 p, 2012.
- E7. Co-editor, *Proc. 13th Annual Computer-Aided Orthopaedic Surgery Meeting*, B. L. Davies, **L. Juskowicz**, B. Thornberry, Orlando, USA, Jun 12–15, 2013.
- E8. Co-editor, *Proc. 12th Annual Computer-Aided Orthopaedic Surgery Meeting*, B. L. Davies, **L. Juskowicz**, E.K. Song, Seoul, South Korea, Jun 13–16, 2012.
- E9. Co-editor, *Proc. 11th Annual Computer-Aided Orthopaedic Surgery Meeting*, B. L. Davies, **L. Juskowicz**, J. Cobb, London, UK, Jun 15–18, 2011.
- E10. Co-editor, *Proc. 10th Annual Computer-Aided Orthopaedic Surgery Meeting*, B. L. Davies, **L. Juskowicz**, P. Merloz, Paris, France, Jun 16–19, 2010.
- E11. Co-editor, *Proc. 9th Annual Computer-Aided Orthopaedic Surgery Meeting*, B. L. Davies, **L. Juskowicz**, S. Murphy, Boston, USA, Jun 17–20, 2009.
- E12. Co-editor, *Proc. 8th Annual Computer-Aided Orthopaedic Surgery Meeting*, B. L. Davies, **L. Juskowicz**, K-S Leung, Hong Kong, China, Jun 4–7, 2008.

- E13. Guest editorial. P. Jannin, K. Cleary, **L. Joskowicz** Special Issue, Selected papers from the 2005 Computer Aided Radiology and Surgery Conference (CARS 2005), *Computer-Aided Surgery*, Volume 11(3): 107-108, 2006.
- E14. *Abstracts of the Seventh Israeli Symposium on Computer-Aided Surgery, Medical Robotics, and Medical Imaging*, **L. Joskowicz** and M. Shoham editors, *Journal of Computer-Aided Surgery*, Volume 10(6), 2006.
- E15. *Abstracts of the Sixth Israeli Symposium on Computer-Aided Surgery, Medical Robotics, and Medical Imaging*, **L. Joskowicz** and M. Shoham editors, *Journal of Computer-Aided Surgery*, Volume 8(6), 2005, pp 316-322.
- E16. *Abstracts of the Fifth Israeli Symposium on Computer-Aided Surgery, Medical Robotics, and Medical Imaging*, **L. Joskowicz** and M. Shoham editors, *Journal of Computer-Aided Surgery*, Volume 7(5), 2002, pp. 300-308.
- E17. *Abstracts of the Fourth Israeli Symposium on Computer-Aided Surgery, Medical Robotics, and Medical Imaging*, **L. Joskowicz** and M. Shoham editors, *Journal of Computer-Aided Surgery*, Volume 6(5), 2001, pp. 305–320.
- E18. *Abstracts of the Third Israeli Symposium on Computer-Aided Surgery, Medical Robotics, and Medical Imaging*, **L. Joskowicz** and M. Shoham editors, *Journal of Computer-Aided Surgery*, Volume 5(5), 2000.
- E19. *Abstracts of the Second Israeli Symposium on Computer-Aided Surgery, Medical Robotics, and Medical Imaging*, **L. Joskowicz** and M. Shoham editors, *Journal of Computer-Aided Surgery*, Volume 4(2), 1999, pp. 105-115.
- E20. *Proc. of the 1st–11th Israeli Symposium on Computer-Aided Surgery, Medical Robotics, and Medical Imaging*, **L. Joskowicz** and M. Shoham editors, The Hebrew University of Jerusalem and Technion, 1998-2008.
- E21. *Annals of Mathematics and Artificial Intelligence*. Special Issue on Foundations of Artificial Intelligence V, **L. Joskowicz**, S. Kraus, and D. Lehmann editors, Vol. 25, Nos 1,2, July 1999, pp 1-160.
- E22. *New directions in contact analysis and simulation*, **L. Joskowicz**, E. Sacks, V. Kumar Eds, IEEE Press, 1998.
- E23. *Annals of Mathematics and Artificial Intelligence*. Special issue, **L. Joskowicz**, F. Hoffman and J.L. Lassez, editors, J.C. Baltzer Scientific Publishing Company, Vol. 10-33, 1994.
- E24. *Design from physical principles*. B. Williams and **L. Joskowicz** Editors, AAAI Fall Symposium Series, AAAI Press, ISBN 0-929280-36-9, 168 pp, 1992.

Patents (P)

- P1. *Robot for use with orthopaedic inserts*. M. Shoham, **L. Joskowicz** C. Milgrom, Z. Yaniv, A. Simkin. U.S. Patent No. 9,872,733, Jan 23, 2018. Mazor Surgical Technologies.
- P2. *Method of needle localization via partial computerized tomographic scanning and system thereof* G. Medan, **L. Joskowicz**, provisional filed Sept 14, 2017.
- P3. *Method of repeat computed tomography scanning and system thereof*. **L. Joskowicz**, G. Medan. A. Kronman, US 2016/0335785, 15110202 Nov 17, 2016.
- P4. *Image-guided robotic system for keyhole neurosurgery*. **L. Joskowicz**, M. Shoham, E. Zehavi, and Y. Shoshan. Patent No. US 9,492,241, Nov 15, 2016.
- P5. *Fast MRI acquisition of repeat scans*. L. Weizman, D. Ben-Bashat, **L. Joskowicz**. Patent Application 61,930,558, January 23, 2015. Yissum.
- P6. *Robotic method for use with orthopedic inserts*, M Shoham, **L Joskowicz**, C Milgrom, Z Yaniv, A Simkin US Patent 8,838,205 45 2014
- P7. *Method for optimal landmark selection and placement for minimal error registration in image-guided neurosurgery*. R. Shamir, **L. Joskowicz**, Y. Shoshan, Patent Application 61,291,577, Nov. 2010. Yissum.
- P8. *Adaptive navigation technique for navigating a catheter through a body channel or cavity*, D. Averbuch, O. Weingarten, **L. Joskowicz**, I. Markov, I. Vorobeychik, R. Cohen. U.S Patent No. 20080118135-A1, May 2008. SuperDimension.
- P9. *Distal intramedullary nail targeting using a bone-mounted robot*, **L. Joskowicz**, M. Shoham, E. Zehavi, US Patent No. 60/389,207, July 2003. Mazor Surgical Technologies.
- P10. *Adjustable drilling jig for targeting locking screws for intramedullary nails locking screws*. C. Milgrom, A. Simkin, **L. Joskowicz**, WO/2003/065907, June 2003. Hadassit.
- P11. *A method for automatically obtaining spatial layout for multimedia presentations*, M. Kim, **L. Joskowicz**. J. Song, U.S. Patent No. 5,669,006, September 1997, IBM Corporation.
- P12. *Interference-free insertion of a solid body into a cavity*. **L. Joskowicz** and R.H. Taylor, U.S. Patent No. 5,343,385, European Patent No. 94110676.7, August 31, 1994, IBM Corporation.

Recent Invited Talks

- Invited speaker, Clinical Day, *CARS 2019: Int. Conf. Comp. Aided Radiology and Surgery*, Rennes, France. Jun 20-23, 2019.
- Keynote speaker, *Artificial Intelligence in Radiology Symposium*, Ministry of Health, Tel Aviv, Israel, Dec 20, 2018.
- Keynote speaker, *MICCAI Workshop on large scale annotation of biomedical data and expert label synthesis*, MICCAI 2018, Granada, Spain, Sept 18, 2018.
- Keynote speaker, *Rajavithi University Hospital Annual Meeting*, Bangkok, Thailand, Feb 21-23, 2018.

- Keynote speaker, *International Symposium on Intelligent Computing Systems*, ISICS'18, Merida, Mexico, Mar 21-23, 2018.
- Invited speaker and session co-organizer, *37th Annual Meeting of the Israel Orthopaedics Association*, Tel-Aviv, Dec 12, 2017
- Invited speaker, *Joint Research Workshop on Biomedical Engineering*, U. of Melbourne, Hebrew U. of Jerusalem, Tel-Aviv, Dec 5-6, 2017.
- Keynote speaker, *6th Conference on Computational Vision and Medical Image Processing*, VipIMAGE'17, Porto, Portugal, Oct 18-21, 2017.
- Invited speaker, Dept of Orthopaedic Surgery, Imperial College, London, UK, June 27, 2017.
- Invited speaker, Faculty of Medicine and IRCAD Center, U. of Strasbourg, France, March 22, 2017.
- Keynote speaker, *12 Encuentro Latinoamericano de Cirujanos de Cadera y Rodilla EL-CCR'16*, Cartagena de Indias, Colombia, Aug 3-6, 2016.
- Invited speaker *MICCAI workshop on Interactive Medical Image Computing* Athens, Greece, Oct 17, 2016.
- Keynote speaker, *3rd Int. Conference on Augmented Reality, Virtual Reality and Computer Graphics*, Otranto, Italy, Jun 15-18, 2016.
- Invited speaker, *Israel-Italy Conference on Medical and Rehabilitation Robotics*, Jun 1-2, Tel-Aviv, Israel, 2016.
- Invited speaker, *1st Joint Meeting of the Israeli and Mexican Mathematical Societies*, Oaxaca, Mexico, Sept 7-11, 2015.
- Keynote speaker, *23rd Int. Congress of the Federation of Latin American Societies of Orthopaedics and Traumatology SLAOT'16*, Mexico City, Aug 20-25, 2015.
- Invited speaker, *The Conference and Exhibit of Medical Equipment and Technology*, MEDICO'15, Tel-Aviv, Apr 27, 2015.
- Invited speaker, *The French-Israeli High Council for Science and Technology Conference on Medical Robotics*, Tel-Aviv, Mar 23-25, 2015.
- Keynote speaker, *Int. Conf. on Medical Innovation*, Mar 14, 2014, Chiba, Japan.
- Invited speaker, *1st Workshop on Rehabilitation Robotics*, Jan 28, 2014, Mexico City, Mexico.
- Invited speaker, *88-89th Meeting of the Societe Francaise de Chirurgie Orthopedique et Traumatologie, CAOS Section*, SOFCOT'13-14, Nov. 2013 and 2014. Paris, France.
- Invited speaker, *2nd Int. Symp. on Computer Aided Orthopaedics Surgery*, May 2-4, 2013, Upper Gallilee, Israel.
- Keynote speaker, *XLIII Int. Congress of the Andalucean Society for Trauma and Orthopaedics*, Jan 31 – Feb 2, 2013, Cordoba, Spain.

- Keynote speaker, *87th Meeting of the SOFCOT, Societe Francaise de Chirurgie Orthopedique et Traumatologie – CAOS Section*, Nov. 16, 2012, Paris, France.
- Keynote invited speaker, *Medical Engineering Week*, Chiba University, Japan, Feb 21-23, 2012.

Professional Affiliations

- Member, Institute of Electrical and Electronic Engineers (IEEE).
- Member, American Society of Mechanical Engineers (ASME).
- Member, International Society for Computer-Aided Orthopaedic Surgery (CAOS-International)
- Member, International Society for Computer-Assisted Surgery (ISCAS)
- Member, Medical Image Computing and Computer Aided Interventions Society (MICCAI).