

**BRIEF RESUME**  
**Professor Anath Fischer**

Address: Laboratory for CAD & LCE, Faculty of Mechanical Engineering Technion, Israel  
e-mail: [meranath@tx.technion.ac.il](mailto:meranath@tx.technion.ac.il); Tel: 972-4-829-3260

**ACADEMIC DEGREES**

- 1985: B.Sc. - Computer Science - Technion, Haifa, Israel.
- 1987: M.Sc. - Technical Sciences (Faculty of Mechanical Eng.) - Technion, Haifa, Israel.
- 1992: D.Sc. – Faculty of Mechanical Engineering - Technion, Haifa, Israel.

**RESEARCH INTERESTS**

Geometric processing and surface/volumetric reconstruction of scanned data:

- Processing scanned data by 3D geometric filters
- Surface reconstruction using neural-network and grid approaches
- Topology extraction, parameterization and remeshing from topological graphs
- Geometric reconstruction of micro scaffolds

Geometric modeling for mechanical analysis:

- Physically-based models for CAD and analysis
- Multi-scale models for bone micro-structures
- Reconstruction of micro structures from SEM images

**HONORS**

The M. Landau Prize for Doctoral Research (1989); The Wolfson Scholarship for Post-Doctoral Research (1992); J. Ullman Memorial Academic Lectureship in Manufacturing Systems and Robotics (1994); Gutwirth Fund (2003); Alexander Goldberg Prize (2003); The Technion Henry Taub Prize for Excellence in Research (2006); The award of the Italian Order of Merit with the rank of Knight for Italy-Israel academic research collaboration (2009).

**GRADUATE STUDENTS**

- 26 completed PhD theses and MSc theses.
- Currently in progress: 2 PhD and 3 MSc students.

**PUBLICATIONS**

- 122 refereed papers published in professional journals and refereed papers published in international conference proceedings.
- 25 refereed papers in Israeli conference proceedings
- 59 invited talks abroad & contributed talks at international conferences.
- 11 chapters in reviewed conference books (Selected papers).
- 23 research reports

## **PUBLIC PROFESSIONAL ACTIVITIES - JOURNALS**

### *Editor of International Journals*

2012-present: Member of the Editorial Board, Associate Editor of Computer aided Design, Elsevier Publisher. 2008-present: Member of the Editorial Board, Associate Editor of Virtual and Physical Prototyping Journal, Taylor & Francis Publisher.

2007-present: Member of the Editorial Board, Associate Editor of the ASME Transactions, Journal of Computing & Information Science in Engineering (JCISE).

2007: Guest Editor, ASME Transactions, Journal of Computing & Information Science in Engineering (JCISE), Vol. 7 (1), 2007, Special issue on "Reverse Engineering and Computational Metrology: Part 2- Computational Metrology Strategies and Methods".

2006: Guest Editor, ASME Transactions, Journal of Computing & Information Science in Engineering (JCISE), Vol. 6 (4), 2006, Special issue on "Reverse Engineering and Computational Metrology: Part 1- Surface Reconstruction Methods".

2006: Guest Editor, International Journal of Shape and Modeling, Vol. 12 (2), 2006, Special issue on "Geometric and Modeling Methods for CAD, Graphics and Verification Applications".

2002: Guest Editor, International Journal of Computer and Graphics, Vol. 26, no. 5, 2002, Special issue on "Geometrical Modeling and Computer Graphics".

## **MEMBERSHIP IN PROFESSIONAL SOCIETIES**

ASME-The American Society of Mechanical Engineering; IEEE-The Institute of Electrical and Electronics Engineers; ACM-Association for Computing Machinery; Eurographics-European Computer Graphic Society; IACCM-Israel Association for Computational Mechanics; CIRP (The International Academy for Production Engineering) (Corres. Member-1996-2003; Fellow-2003-present).

## **RESEARCH GRANTS**

1996-1999: International Scientific Cooperation Korea-Israel - Ministry of Science Joint project with KIST- Korea Institute of Science and Technology. Subject: "Geometric Modeling and Rapid Prototyping Applications for Concurrent Eng".

1999-2001: International Scientific Cooperation France-Israel - Ministry of Science. Joint project with SYNTIM, INRIA-Rocquencourt Subject: "Remote Design for Manufacturing across the WWW".

1999-2000: France-Israel Scientific and Technical Cooperation Program, ARC-EN-CIEL KESHET 1999. Ministry of Science. Subject: "Constrained Multi-Resolution Meshes for Layered Manufacturing". Joint program with INPG-Institute Nat. Polytechnique De Grenoble, CNRS, UJF.

2001-2002: "Tele-dentistry: A New Method for Scanning, Measuring and Analyzing Dentition via the Internet based on 3D Holographic Sensors", Bruce Rappaport Faculty of Medicine, Tele-Medicine Galil Grant, Technion-Israel.

2001-2002: "Tele-dentistry: A New Method for Scanning, Measuring and Analyzing Dentition via the Internet based on 3D Holographic Sensors", Mitchell Grant, Technion-Israel.

- 2002-2004: "Advanced Reverse Engineering Methods Based on Integrated Global and Local Techniques", DFG-The National Research Foundation in Germany.
- 2002-2004: "Advanced Reverse Engineering Methods Based on Topological Neural Network Techniques", MAGNET, Ministry of Industry and Trade.
- 2002-2005: "Fundamentals of Virtual Reality and Medical Applications", Ministry of Science, an infrastructure project, as part of Tikshuv Technologies for Improving Citizens' Quality of Life.
- 2002-2003: "3D Imaging and Analysis for Medical Applications", International IBM - 3D Labs SUR Grant.
- 2003-2004: "Visualization of Fracture Surfaces", Dassault Systems, France and the Embassy of France in Israel.
- 2004-2008: "Virtual Research Lab in Knowledge Communities in Production" (VRL-KCiP), EU Network of Excellence as part of the EU 6th Framework Programme. 4-year project, (Co-P.I.s from Israel, France, Germany, Belgium, The Netherlands, Italy-CNR; Politechnique di Milano; Politechnique di Torino, Greece, U.K., Slovenia, Spain).
- 2004-2005: "Tele-Manufacturing of Reconstructed Objects Based on Neural Networks and Subdivision Techniques", DFG - The National Research Foundation in Germany.
- 2005-2006: Italy-Israel Scientific and Technical Cooperation Program. Italian Ministry of Foreign Affairs. Subject: "Modeling Imaging & Tolerancing in Production Engineering". Joint program with Politecnico di Torino.
- 2007-2009: "Advanced Methods for Reconstruction of 3D Synthetic Objects", Ministry of Science, an infrastructure project, (Co-P.I.s from the Technion, TA University, Hebrew University).
- 2007-2008: "3D Reconstruction from  $\mu$ CT/ $\mu$ MRI Images and Finite Element Analysis for Evaluation of Bone Micro-Structure in Bone Metabolic Diseases with Fracture Risks", Technion Fund for Medical-Engineering collaboration.
- 2008-2009: "Computational Characterization of the Influence of Femoral Trochlear Osteotomy on Patellofemoral Pressure Distribution", Institutional Review Board (IRB).
- 2009-2010: "Modeling and Finite Element analysis of micro-scaffold-based implants for bone tissue engineering", Technion Gurwin Foundation.
- 2010-2011: "Precision inspection system for manufactured CAD models using multi-scale sensors", Technion Gordon Fund.
- 2010-2011: Germany-Israel Umbrella cooperation. A project with RWTH Aachen University: "Utilizing HPC for Multi-scale Modeling, Remodeling and FE Analysis of Metabolic Processes in the Bone Microstructure", (Co-P.I.s- A. Fischer, P. Bar-Yoseph, ME Technion, D. Weichert, RWTH Aachen University).
- 2011-2012: "Geometric Design and analysis for micro-structures of rubber and its carbon inclusions", Basic research funded by Total-Hutchinson company, France, (Co-P.I.s A. Fischer, P. Z. Bar-Yoseph ME Technion).

- 2011-2012: “Multi-scale stereo-photogrammetry system for inspection of fracture surfaces using scanning electron microscope”, (Co-P.I.s A. Fischer, D. Rittel ME Technion), Gordon Fund.
- 2011-2014: “Real multi data and knowledge based proactive quality control system for in-process multi-stage defect reduction (Murom)”, EU 7th Framework Programme. (Co-P.I.s A. Fischer- Technion, Israel, Spain, Italy, Germany, Switzerland).
- 2012-2013: “Multiresolution Hierarchical Geometric Model for Interactive Virtual Assembly System”, (P.I: A. Fischer ME Technion), Gordon Fund, 1 year project.

### **RESEARCH EXCHANGE PROGRAMS**

- 1999-2000: France-Israel Scientific and Technical Cooperation Program, ARC-EN-CIEL KESHET. Ministry of Science: "Constrained Multi-Resolution Meshes for Layered Manufacturing". Joint program with INPG-Institute Nat. Polytechnique De Grenoble, CNRS.
- 2003-2004: “Visualization of Fracture Surfaces”, Dassault Systems, France and the Embassy of France in Israel.
- 2005-2006: Italy-Israel Scientific and Technical Cooperation Program. Italian Ministry of Foreign Affairs. Subject: "Modeling Imaging & Tolerancing in Production Engineering". Joint program with Politecnico di Torino (Prof. R. Levy).
- 2006-2009: Italy-Israel - Ministry of R&D and Universities (Italy). A project with CNR, Institute di Mathematical Applicator and Technologies Informatiche-IMATI (Dr. B. Falcidieno), Univ. of Genova (Prof. L. De Floriani): "Shape Modeling and Reasoning: New Methods and Tools".
- 2010-2011: Italy-Israel – Lombardia region (Italy). A project with CNR, Istituto di Tecnologie Industriali ed Automazione- ITIA (Prof. T. Tolio, head): "Hyper-Flexible and Autonomous Industrial Robot Systems ".

### **PATENTS**

1. D. Steiner, A. Fischer, "Automatic Remeshing by Mapping a 2D Grid on 3D Genus-g Meshes based on Topological Analysis", U.S.A., published by US Patent Office on May 2009, No. US 2009/0128556 A1.
2. Y. Holdstein, A. Fischer, "Modeling micro-scaffold-based implants for bone tissue engineering", published by US Patent Office on July 2009, No. WO/2009/087640.

### **PUBLIC PROFESSIONAL ACTIVITIES- CONFERENCES**

#### **International Conference Co-Chair**

- 2010: Conference Co-Chair, ACM Solid and Physical Modeling (SPM), 2010, Haifa, Israel, 60 participants.
- 2008: Program Chair, Program & Organization Committee, 9th Biennial ASME Conference on Engineering Systems Design and Analysis - ESDA 2008, 2008, Haifa, Israel, 365 papers, 400 participants.

**Bi-National Conference Co-Chair**

- 2011: Conference Co-Chair, Italy-Israel symposium on “Robotics and imaging for Medical Surgery and rehabilitation”, 2011, Milano, Italy, June 14-15 2011.
- 2010: Conference Co-Chair, Israel-Italy symposium on “High-Tech & Recovery of function: New Technologies for Rehabilitation Medicine”, 2010, Haifa, Israel, 60 participants (25 Italian delegates).
- 2010: Symposium Chair, Israel-Italy (Lombardia region) Symposium on “New Frontiers for the Automation Sector”, Haifa, 40 delegate participants.
- 2007: Conference Co-Chair, Program Committee, Bi-National Italy-Israel Conference on "Shape Modeling and Reasoning for Industrial and Bio-Mechanical Applications", Haifa, Israel, May 2007, 100 participants.
- 2007: Conference Co-Chair and Program Committee, Bi-National Korea-Israel Conference on "Geometric Modeling and Computer Graphics", Seoul, Korea, January 2007, 120 participants.
- 2005: Conference Co-Chair, Program Committee, Bi-National Korea-Israel Conference on "New Technologies and Visualization Methods for Product Development", Haifa, Israel, November 2005, 90 participants, 6 invited talks from the EU and 6 invited talks from Industry.
- 2004: Workshop Co-Chair, Bi-National Israel-Italy Workshop on “Measurements and Uncertainty Evaluation in Coordinate Measuring Machine (CMM) and Scanners, and their Implication on Design and Reverse Engineering”, Haifa, Israel, November 2004, 90 participants.
- 2003: Workshop Co-Chair, Bi-National France-Israel Workshop on “Product Lifecycle Management Competency in the New Era-II”, as part of Technion-Dassault Systemes-IBM collaboration, Paris, France, June 2003.
- 2001: Workshop Co-Chair, Program Committee, Bi-National Korea-Israel Conference on "Geometric Modeling Methods", Seoul, Korea, October 2001, 80 participants.
- 1999: Conference Co-Chair, Program and Editorial Committees, Bi-National Korea-Israel Conference on "New Themes in Computerized Geometrical Modeling", Seoul, Korea, 120 participants, October 1999.
- 1998: Conference Co-Chair, Bi-National Korea-Israel Conference on "New Themes in Computerized Geometrical Modeling", Tel Aviv and Haifa, Israel, February 1998, 150 participants.
- Member of International Program Committees of more than 100 conferences and workshops.