

Poitiers, December 30, 2021

to Professor Paolo ATZENI
Università Roma Tre

Dear Colleague,

Professor Alberto PAOLUZZI (Computer Science, Dept. of Mathematic and Physics) requested the title of Professor Emeritus, and it is a great pleasure for me to write this support letter.

Prof. Paoluzzi is a great pioneer in Geometric Modeling. Throughout his career, he produced many innovative and very interesting contributions in Computer Graphics, Geometric Modeling, Computer-Aided Design and Image Analysis. He proposed new models for representing geometric objects, new operations for handling them, and conceived and developed full geometric modeling softwares. He enriched his proposals by studying their use in different application fields, from the control of constructions to the design and implementation of geometric modeling languages.

Many researchers have based parts of their works upon the results of Prof. Paoluzzi. For instance, several of my works about simplicial, cubical, simploidal et cellular structures have benefited from his proposals and results.

So, the contributions of Prof. Paoluzzi to the field of Geometric Modeling and its applications are important, and constant throughout his career.

I am convinced that he still has a lot to contribute to the field, that is why I support his request very warmly.

I remain at you disposal for any further information.

Yours sincerely

Pascal Lienhardt
Professor, Computer Science
XLIM Laboratory
University of Poitiers, France



Short CV

Name : LIENHARDT **Forename :** Pascal **Age :** 63

- 1994- : Full Professor, University of Poitiers
UFR Sciences Fondamentales et Appliquées, Computer Science Department ;
XLIM laboratory, UMR CNRS 7252
- 1989-1994: Researcher, C.N.R.S.
- 1987-1989: Associate Professor, Computer Science Dept., Louis Pasteur University,
Strasbourg

-
- 2013 - 2019 : head of Master in Computer Science, University of Poitiers
 - 2007 - 2015 : member of C.N.U. section 27
 - 2004 - 2007 : head of Signal - Image - Communications laboratory, University of Poitiers
 - 1995 - 2001 : head of Computer Science Dept., Université de Poitiers.

Research topics : Geometric Modeling, Computer Graphics

Main publications

Book

- "Combinatorial maps: efficient data structures for computer graphics and image processing".
G. Damiand, P. Lienhardt. A K Peters/CRC Press, September 2014, 404 p.

International journals

- "Local computation of homology variations over a construction process". W. Rharbaoui, S. Alayrangues, P. Lienhardt, S. Peltier. Computer Aided Geometric Design, Vol. 81, 2020.
- "Simploidal sets : a data structure for handling simploidal Bézier spaces". S. Peltier, P. Lienhardt. Computer Aided Geometric Design, Vol. 62, 2018, pp. 44-62.
- "Homology of cellular structures allowing multi-incidence". S. Alayrangues, G. Damiand, P. Lienhardt, S. Peltier. Discrete and Computational Geometry, Vol. 54, n° 1, July 2015, pp. 42-77.
- "Simploidal sets : definitions, operations and comparison with simplicial sets". S. Peltier, L. Fuchs, P. Lienhardt. Discrete Applied Mathematics, Vol. 157, January 2009, pp. 542-557.
- "Equivalence between closed connected n-G-maps without multi-incidence and n-surfaces". S. Alayrangues, X. Daragon, J.-O. Lachaud, P. Lienhardt. Journal of Mathematical Imaging and Vision, Vol. 32, n° 1, september 2008, pp. 1-22.
- "Topology-based modelling and rendering of complex indoor scenes". D. Fradin, D. Meneveaux, P. Lienhardt. Computer Graphics Forum, Vol. 25, n° 2, june 2006, pp. 149-162.
- "Generalized map pyramids : definition, representations and basic operations". C. Simon, G. Damiand, P. Lienhardt. Pattern Recognition, Vol. 39, n° 4, pp. 527-538, April 2006.
- "Automatic building of structured geological models". S. Brandel, S. Schneider, M. Perrain, N. Guiard, JF Rainaud, P. Lienhardt, Y. Bertrand. Journal of Computing and Information Science in Engineering, Vol. 5, No. 2, 2005. Et aussi dans les actes de ACM Symposium on Solid Modeling and Applications, Gênes, Italie, juin 2004, pp. 59-69.



- "Removal and contraction operations to define combinatorial pyramids : application to the design of a spatial modeler". G. Damiand, Martine Dexet-Guiard, Eric Andres, P. Lienhardt. *Image Vision and Computing*, Vol. 23 n° 2, février 2005, pp. 259-269.
- "Cartesian product of simplicial and cellular structures". P. Lienhardt, X. Skapin, A. Bergey. *International Journal of Computational Geometry and Applications*, Vol. 14, n° 3 (juin 2004), 45 pages.
- "Using Cartesian Product for Animation". X. Skapin, P. Lienhardt. *Journal of Visualization and Computer Animation*, Vol. 12, n° 3 (2001), pp. 131-144 (Présenté à EG CAS'00, Eurographics Workshop on Computer Animation and Simulation 2000, Interlaken, Suisse (août 2000), pp. 187-201).
- "Cellular complexes as structured semi-simplicial sets". H. Elter, P. Lienhardt. *International Journal of Shape Modeling*. Vol. 1, n° 2 (1995), pp. 191-217.
- "N-Dimensional Generalized Combinatorial Maps and Cellular Quasi-Manifolds". P. Lienhardt. *International Journal of Computational Geometry and Applications*, Vol. 4, n° 3 (1994), pp. 275-324.
- "Modeling and Programming Evolutions of Surfaces". X. Chen, P. Lienhardt. *Computer Graphics Forum*, Vol. 2, n° 5, 1992. Une partie du travail présenté dans cet article a été présentée aux Journées Groplan, Saint-Etienne, France (novembre 1990).
- "Topological Models for Boundary Representation : A Comparison with N-Dimensional Generalized Maps". P. Lienhardt. *Computer-Aided Design*, Vol. 23, n° 1 (1991), pp. 59-82.

National journals

- "Homologie des ensembles simplifiables". S. Peltier, L. Fuchs, P. Lienhardt. *Technique et Science Informatique*, 2006.
- "Subdivisions de surfaces et cartes généralisées de dimension 2". P. Lienhardt. *RAIRO – Informatique Théorique et Applications*, Vol. 25, n° 2 (1991), pp. 171-202.

Chapters

- "Combinatorial models for topology-based geometric modeling". P. Lienhardt, L. Fuchs, Y. Bertrand. *Quaderni di Matematica*, Université de Naples, Vol. 22, 2008, pp. 91-136 (chapitre du livre "Theory and Applications of Proximity, Nearness and Uniformity).
- "Modèles topologiques". P. Lienhardt, L. Fuchs, Y. Bertrand. Dans "Informatique graphique, modélisation géométrique et animation", sous la direction de D. Bechmann et B. Péroche, Editions Hermès, pp. 49-93, 2007.
- "Basic principles of topology-based methods for simulating metamorphoses of natural objects". J. Françon, P. Lienhardt. In *Artificial Life and Virtual Reality* (N. Magnenat-Thalmann et D. Thalmann éditeurs, J. Wiley, 1994, pp. 23-44).

Book editor

- Numéro spécial de la revue "Techniques et Sciences Informatiques" à l'occasion des journées de l'AFIG 2004, Editions Lavoisier, décembre 2006. D. Meneveau, P. Lienhardt.
- Edition de "Discrete Geometry for Computer Imagery 2005", LNCS 3429, Springer Verlag, 2005. E. Andres, G. Damiand, P. Lienhardt.



International conferences (reviewed papers)

- "Homology computation during an incremental construction process" P. Lienhardt, S. Peltier. Conférence invitée à CTIC 2016, Marseille, France, Juin 2016, in Lecture Notes in Computer Science n° 9667 (A. Bac, J.-L. Mari eds, Springer), pp. 7–15.
- "Border operator for generalized maps" S. Alayrangues, S. Peltier, G. Damiand, P. Lienhardt. 15ème Conférence Discrete Geometry for Computer Imagery, Montréal, Canada, Septembre 2009, pp. 300-312.
- "Homology computation on cellular structures in image context". S. Alayrangues, G. Damiand, L. Fuchs, P. Lienhardt, S. Peltier. Proc. of the Workshop on Computational Topology in Image Context, pp. 19-28, August 2009.
- "Homology of simploidal sets" S. Peltier, L. Fuchs, P. Lienhardt. 13ème Conférence Discrete Geometry for Computer Imagery, Szeged, Hongrie, Octobre 2006.
- "Topological map : an efficient tool to compute incrementally topological features on 3D images" G. Damiand, S. Peltier, L. Fuchs, P. Lienhardt. Proc. of 11th Int. Workshop on Combinatorial Image Analysis, Vol. 4040, pp. 1-15, juin 2006.
- "Receptive fields for generalized map pyramids : the notion of generalized orbit". C. Simon, G. Damiand, P. Lienhardt. Proc. of 12th Conf. Discrete Geometry for Computer Imagery, Poitiers, France, Avril 2005, in LNCS n° 3429, pp. 56-67.
- "Pyramids of n-dimensional generalized map pyramids". C. Simon, G. Damiand, P. Lienhardt. Proc. of 5th IAPR-TC15 Workshop on Graph-Based Representations in Pattern Recognition, Poitiers, France, Avril 2005, in LNCS n° 3434, pp. 142-152.
- "Equivalence between regular n-G-maps and n-surfaces". S. Alayrangues, X. Daragon, J.O. Lachaud, P. Lienhardt. Proc. of 10th International Workshop on Combinatorial Image Analysis, 15 p., decembre 2004, Auckland, Nouvelle-Zélande.
- "Hierarchies relating Topology and Geometry". W. G. Kropatsch, Y. Haxhimusa, P. Lienhardt. in Cognitive Vision Systems (Springer-Verlag), September 2004, version étendue d'une présentation faite à "Cognitive vision systems", Schloss Dagstuhl, Allemagne (décembre 2003).
- "Removal and contraction for n-dimensional generalized maps". G. Damiand, P. Lienhardt. Proc. of DGCI'03, Naples, Italie, novembre 2003, pp. ????, in Lecture Notes in Computer Sciences N° 2886 (taux de sélection d'environ 1/3 pour les présentations orales). Version révisée de l'article de même titre publié dans les Actes du Computer Vision Winter Workshop, Bad Aussee, Autriche, février 2002, pp. 208-221.
- "SpaMod : design of a spatial modeling tool". E. Andres, R. Breton, P. Lienhardt. in Lecture Notes in Computer Sciences n° 2243 (G. Bertrand, A Imiya, R. Klette eds, Springer), pp. 91–107 (2001), version étendue d'une présentation faite à l'école d'hiver "Digital and image geometry", Schloss Dagstuhl, Allemagne (décembre 2000).
- "A course in Topology-based Geometric Modeling". P. Lienhardt, L. Fuchs, Y. Bertrand. Proc. of GVE'99 (Eurographics Workshop on Graphics and Visualization Education), Coimbra, Portugal (juillet 1999), pp. 39-44.
- "Aspects in Topology-Based Geometric Modeling". P. Lienhardt. Conférence invitée à DGCI'97, Montpellier, France, décembre 1997, in Lecture Notes in Computer Science n° 1347 (E. Ahronovitz, C. Fiorio eds, Springer), pp. 33–48.



- "Topological structures for d-dimensional free-form objects". L. Fuchs, P. Lienhardt. Proc. of CAGD'97, Lillehammer, Norvège, juillet 1997. Présenté aussi aux Journées Franco-Espagnoles d'Algorithmique Géométrique, Barcelone, Espagne, et aux journées "Modeleurs Géométriques" du GDR AMI, Grenoble, septembre 1997.
- "Cartesian product of simplicial sets". V. Lang, P. Lienhardt. Proc. of WSCG'97, Plzen, Czech Republic, février 1997.
- "Simplicial sets and triangular patches". V. Lang, P. Lienhardt. Proc. of CGI'96, Pohang, Corée, juin 1996.
- "A study of basic tools for simulating metamorphoses of subdivided 2D and 3D objects. Applications to the internal growing of wood and to the simulation of the growing of fishes". O. Terraz, P. Lienhardt. Actes de 6th Eurographics Workshop on Animation and Simulation, Maastricht, Pays-Bas, septembre 1995, in Computer Animation and Simulation'95 (D. Terzopoulos et D. Thalmann eds, Springer), pp. 104-129.
- "Geometric Modeling with Simplicial Sets". V. Lang, P. Lienhardt. Actes de Pacific Graphics'95, Séoul, Corée (août 1995), in Computer Graphics and Applications (S.Y. Shin et T.L. Kunii eds., World Scientific Publishing), pp. 475-494.
- "Some aspects of a method for programming metamorphoses of any subdivisions of any surfaces". O. Terraz, P. Lienhardt. Actes de Compugraphics'93 (3rd Int. Conf. on Computational Graphics and Visualization Techniques), Alvor, Portugal, Décembre 1993.
- "Algebraic Specification and Development in Geometric Modeling". Y. Bertrand, J.-F. Dufourd, J. Françon, P. Lienhardt. Actes de TAPSOFT'93, Orsay, France, Avril 1993.
- "Different combinatorial models based on the map concept for the representation of different types of cellular complexes". H. Elter, P. Lienhardt. Actes de IFIP TC 5/WG II Working Conference on Geometric Modeling in Computer Graphics Genova, Italy, juillet 1993, in Modeling in Computer Graphics (B. Falcidieno et T.L. Kunii eds., Springer).
- "Extension of the Notion of Map for the Representation of the Topology of Cellular Complexes". H. Elter, P. Lienhardt. Fourth Canadian Conference on Computational Geometry, St John's, Canada, Août 1992. Présenté aussi aux Journées Gros Plan, Lille, France (décembre 1991).
- "Barycentric Triangulation of Generalized Maps". P. Lienhardt. Second Canadian Conference on Computational Geometry, Ottawa, Canada, août 1990. Présenté aussi aux Journées de Géométrie Algorithmique, INRIA-Sophia Antipolis, France, juin 1990.
- "Subdivisions of Surfaces and Generalized Maps". P. Lienhardt. Actes de Eurographics'89, Hamburg, R.F.A., septembre 1989, pp. 439-452.
- "2-G-Maps : A Model for the Manipulation of General 2-Dimensional Subdivisions". P. Lienhardt. Actes de International Conference on C.A.D. & C.G., Août 1989, Beijing, Chine.
- "Subdivisions of N-Dimensional Spaces and N-Dimensional Generalized Maps". P. Lienhardt. Actes du 5° Annual A.C.M. Symposium on Computational Geometry, Saarbrücken, R.F.A., juin 1989, pp. 228-236.
- "Free-form Surfaces Modeling by Evolution Simulation". P. Lienhardt. Actes de Eurographics'88, Nice, France, septembre 1988, pp. 327-341.
- "Extension of the Notion of Map and Subdivisions of a Three-Dimensional Space". P. Lienhardt. 5° Symposium on the Theoretical Aspects in Computer Science, Bordeaux, France, février 1988, in Lecture Notes in Computer Science n° 294, pp. 301-311.



Other conferences

- "Methodology for automatic building of structured geological models". S. Schneider, M. Perrain, N. Guiard, J.-F. Rainaud, P. Lienhardt, Y. Bertrand. GeoMod International Conference, Emmetten, Suisse, juin 2004, in "From Moutains to Sedimentary Basins : modelling and testing geological processes", Vol. 45-1, pp. 358-362.
- "Geometric Operations for 4D-Modelling" N. Dubreuil, D. Bechmann, Y. Bertrand, S. Brandel, P. Lienhardt. Int. Conf. on 3D Modeling of Natural Objects, Nancy, juin 1998
- "Modélisation et programmation d'évolutions de surfaces". X. Chen, P. Lienhardt. Conférence invitée à IMAGINA'92, Monaco (Forum des Nouvelles Images de Monte-Carlo, dans le cadre du Festival International de la Télévision, janvier 1992).
- "Quelques structures et constructions en Modélisation Topologique". P. Lienhardt. Conférence invitée au Colloque "Images de Synthèse et Applications", 8^o Entretiens du Centre Jacques Cartier, décembre 1995, St Etienne, France.
- "Modélisation volumique à base topologique". Y. Bertrand, J.-F. Dufourd, J. Françon, P. Lienhardt. Actes de MICAD'92, Paris, France (février 1992).
- "LECM : un langage de programmation d'évolutions de surfaces libres". P. Lienhardt. Actes de Pixim'88, Paris, France, octobre 1988, pp. 243–261.
- "Synthèse d'images de feuilles végétales". P. Lienhardt, J. Françon. Actes du 3^o Colloque Image, La Villette, Paris, France, mai 1987.

