CTIC 2012 – Conference on Computational Topology in Image Context
Scientific report

The CTIC 2012 Conference was scheduled for February 6-8, 2012, but had to be postponed to May 28-30 because of an abnormal snowfall in Bertinoro and in all the region which caused the closure of the conference center and even the intervention of the Army for helping the population. The conference was the fourth of the series, the previous editions having taken place in Poitiers (France), St.Kathrein/Offenegg (Austria) and Chipiona (Spain).

There has been financial support by the Department of Mathematics of the Univ. Bologna, by the National Institute for High Mathematics, by the Bologna Rotary Club with two 400 Euros grants and by private citizens with three 200 Euros grants.

The invited speakers were:
Dr. Frédéric Chazal, from INRIA Saclay, Orsay, who gave the lecture "Topological data analysis using distance-based functions"
Prof. Walter Kropatsch, from PRIP, Vienna Technical University, who gave the lecture "Representing and Manipulating Cyclic Paths in Continuous and Discrete Spaces".

There were 29 participants (invited speakers and organizers included) from 9 countries. There were 15 contributed talks. Talks and lectures gave opportunity to interesting discussions and many new contacts. The only flaw could be seen in the number of submitted contributions, which was little greater than the number of accepted ones. This was also an argument for discussing a possible lesser frequency of the conference series. A sure impact of the conference is the evidence of an increasing usefulness of Algebraic Topology in the domain of Image Understanding.

Connected to the contributed talks there were as many articles which were published by Springer (LNCS 7309) and distributed at the conference. There will be a Special Issue of the journal Computer Vision and Image Understanding dedicated to the Conference but not limited to papers presented there.

Final Program

Sunday, May 27th	
19:30-22:30	WELCOME BUFFET
Monday, May 28th	
9:30-10:30	**Walter Kropatsch** PRIP, Vienna University of Technology *Representing and Manipulating Cyclic Paths in Continuous and Discrete Spaces View*
10:30-11:00	COFFEE BREAK
11:00-11:25	**J. Carnero, H. Molina-Abril, and P. Real** *Triangle Mesh Compression and Homological Spanning Forests*
11:30-11:55	**R. Ayala, D. Fernández-Ternero, and J.A. Vilches** *Perfect Discrete Morse Functions on Triangulated 3-Manifolds*
12:00-14:00	LUNCH BREAK
14:00-14:25	**A. Pacheco and P. Real** *An Efficient Algorithm to Compute Subsets of Points in Z_n*
14:30-14:55	**A. Gutierrez, D. Monaghan, M. J. Jimenez, and N. E. O'Connor** *Persistent Homology for 3D*

	Reconstruction Evaluation
15:00-15:30	COFFEE BREAK
15:30-15:55	**P. Brendel, P. Dłotko, M. Mrozek, N. Żelazna** *Homology Computations via Acyclic Subspace*
16:00-16:25	**L. Čomić and L. De Floriani** *Topological Operators on Cell Complexes in Arbitrary Dimensions*

Tuesday, May 29th

9:30-10:30	**Frédéric Chazal** INRIA Saclay, Orsay *Topological Data Analysis using Distance-based Functions*
10:30-11:00	COFFEE BREAK
11:00-11:25	**Erald Vuçini** *Enhancing the Reconstruction from Non-uniform Point Sets using Persistence Information*
11:30-11:55	**G. Damiand, R. Gonzalez-Diaz, and S. Peltier** *Removal Operations in nD Generalized Maps for Efficient Homology Computation*
12:00-14:00	LUNCH BREAK
14:00	Visit to Ravenna
20:00	Gala dinner

Wednesday, May 30th

9:30-10:30	**M.M. Mesmoudi, L. De Floriani and P. Magillo** *Concentrated Curvature for Mean Curvature Estimation in Triangulated Surfaces*
10:00-10:25	**F. Peña-Cantillana, A. Berciano, D. Díaz-Pernil, and M. A. Gutiérrez-Naranjo** *Parallel Skeletonizing of Digital Images by Using Cellular Automata*
10:30-11:00	COFFEE BREAK
11:00-11:25	**C. Escribano, A. Giraldo, and M. A. Sastre** *Deletion of (26, 6)-simple Points as Multivalued Retractions*
11:30-11:55	**J. Heras, M. Dénés, G. Mata, A. Mörtberg, M. Poza, and V. Siles** *Towards a Certified Computation of Homology Groups for Digital Images*
12:00-14:00	LUNCH BREAK
14:00-14:25	**H. Wagner, P. Dłotko, and M. Mrozek** *Computational Topology in Text Mining*
14:30-14:55	**A. Cerri, B. Di Fabio, and F. Medri** *Multi-scale Approximation of the Matching Distance for Shape Retrieval*
15:00-15:25	**F. Cagliari, M. Ferri, L. Gualandri, and C. Landi** *Persistence Modules, Shape Description, and Completeness*