College of Engineering, Computing and Applied Sciences

RESUME – Iuricich Federico

PERSONAL DATA
Assistant Professor
School of Computing
Clemson University, Clemson, SC 29634

EDUCATION
Ph.D. University of Genova (Italy), 2014, Computer Science
M.Sc. University of Genova (Italy), 2010, Computer Science
B.Sc. University of Genova (Italy), 2008, Computer Science

PROFESSIONAL EXPERIENCE
Clemson University, 2018- , Assistant Professor of Computer Science
Queens College (CUNY) – Computer Science, 2018- , Visiting researcher
University of Maryland – Geographical Sciences, 2016-2018, Postdoctoral fellow
University of Maryland – Computer Science, 2014-2016, Postdoctoral fellow
University of Genova – Computer Science, 2011-2014, Research associate

MEMBERSHIPS
Member, Institute of Electrical and Electronic Engineers, IEEE (2016-current)

PROFESSIONAL ACTIVITIES
ACM SIGSPATIAL conference, PC member, (2015- present)
Visualization in Environmental Sciences workshop, PC member, (2015- present)
Smart Tools and Apps in Computer Graphics (STAG), PC member (2015- present)
Conference on Graphics Patterns and Images (SIBGRAPI), PC member (2018- present)
European conference on Visualization (EuroVis), PC member, (2015, 2021)
Conference on Image Analysis and Processing (ICIAP), PC member, (2015,2017,2019)

International Conference on Pattern Recognition (ICPR), reviewer (2020- present)
IEEE VIS 2020, reviewer (2018-present)
European conference on Visualization (EuroVis), reviewer, (2020- present)

3rd SIGSPATIAL Workshop on Analytics for Local Events and News, Co- organizer, (2019)
International school "Homology: Theoretical and Computation", Co- organizer, (2014)

PUBLICATIONS

Books and Monographs

1. L. Comic, L. De Floriani, P.Magillo, F. Iuricich, *Morphological Modeling of Terrains and Volume Data*, Springer Verlag, 2014.

Refereed Journal Publications

1. Liu G., Iuricich F., Fellegara R., De Floriani L.. *"TopoCluster: A Localized Data Structure for Topology-based Visualization"*. *IEEE Transactions on Visualization and Computer Graphics* (preprint), 2021
2. Iuricich F. "Persistence cycles for visual exploration of persistent homology". *IEEE Transactions on Visualization and Computer Graphics*, September 2021 (preprint)
3. Eckert, M. A., Iuricich, F., Vaden, K. I., Glaze, B. T., & Dyslexia Data Consortium. The Topology of Pediatric Structural Asymmetries in Language-Related Cortex. *Symmetry*, *12*(11), 1809. (2020)
4. S. Scaramuccia, F. Iuricich, L. De Floriani, C. Landi, "Computing Multiparameter Persistent Homology through a Discrete Morse-Based Approach". In *Computational Geometry*, **89,** id 101623, (2020).
5. F. Iuricich, R. Fellegara, L. De Floriani, U. Fugacci, "Efficient Homology-preserving simplification of high-dimensional simplicial shapes". In *Computer Graphics Forum*, **39**(1)**,** pages 244-259, (2020).
6. U. Fugacci, F. Iuricich, L. De Floriani, "Computing discrete Morse complexes on simplicial complexes". In *Graphical models*, **103**, id 10123, (2019).
7. F. Iuricich, L. De Floriani, "Hierarchical Forman Triangulation: a multi-scale model for scalar field analysis". In *Computer and Graphics*, **66**, 113-123 (2017).
8. C. Heine, H. Leitte, M. Hlawitschka, F. Iuricich, L. De Floriani, H. Hagen and C. Garth, "A Survey of Topology-based Methods in Visualization". In *Computers Graphics Forum*, **35**(3), 643-667, (2016).
9. L. Comic, L. De Floriani, F. Iuricich and P. Magillo, "Computing a Forman Gradient From a Watershed Decomposition". In *Computers and Graphics*, **58**(6), 43-52 (2016).
10. F. Iuricich, U. Fugacci, L. De Floriani, "Topologically-Consistent Simplification of Discrete Morse Complexes". In *Computers and Graphics*, **34**, 157-166 (2015).
11. L. De Floriani, U. Fugacci, F. Iuricich and P. Magillo. "Morse Complexes for Shape Segmentation and Homological Analysis: Discrete Models and Algorithms". In *Computer Graphics Forum*, **34**(2), 761-785 (2015).
12. L. Comic, L. De Floriani, U. Fugacci and F. Iuricich, "Topological Modifications and Hierarchical Representation of Cell Complexes in Arbitrary Dimensions". In *Computer Vision and Image Understanding (CVIU)*, **121**, 2-12 (2014).

13. P. D. Simari, L. De Floriani, F. Iuricich and M. M. Mesmoudi, "Generalized extrinsic distortion and applications". In *Computers and Graphics*, **37**(6), 582- 588 (2013).
14. K. Weiss, F. Iuricich, R. Fellegara and L. De Floriani, "A primal/dual representation for discrete Morse complexes on tetrahedral meshes". In *Computers Graphics Forum*, **32**(3), 361-370 (2013).
15. L. Comic, L. De Floriani, F. Iuricich, "Dimension-independent multi-resolution Morse complexes". In *Computers and Graphics*, **36**(5), 541-547 (2012)

Refereed Chapters in Books

1. L. De Floriani and U. Fugacci and F. Iuricich, "Homological Shape Analysis through Discrete Morse Theory". In *Perspectives in Shape Analysis*, Springer Berlin Heidelberg, 187-209 (2016).
2. L. De Floriani, F. Iuricich, P. Magillo, M. M. Mesmoudi, K. Weiss, "Discrete Distortion for 3D data analysis". In *Visualization in Medicine and Life Sciences II* (VMLS II), Springer Berlin Heidelberg, 3-25 (2013).
3. L. Comic , L. De Floriani, and F. Iuricich. "Modeling Three Dimensional Morse and Morse-Smale Complexes". In *Innovations for Shape Analysis: Models and Algorithms*, Springer, 3-34 (2012).

Conference Proceedings (Reviewed)

1. Song Y., Fellegara R., Iuricich F., De Floriani L. "Efficient topology-aware simplification of large triangulated terrains". *Proceedings of the 29th International Conference on Advances in Geographic Information Systems*, pages 576-587, 2021.
2. Xu, X., Iuricich, F., & De Floriani, L. A Persistence-Based Approach for Individual Tree Mapping. In *Proceedings of the 28th International Conference on Advances in Geographic Information Systems* (pp. 191-194). (2020).
3. R. Fellegara, F. Iuricich and L. De Floriani, "Efficient representation and analysis of triangulated terrains". In *Proceedings of the 25th International Conference on Advances in Geographic Information Systems*, 437-440 (2017).
4. R. Fellegara, U. Fugacci, F. Iuricich and L. De Floriani, "Analysis of geolocalized social networks based on simplicial complexes". In *Proceedings of the 9th ACM SIGSPATIAL International Workshop on Location-Based Social Networks (LSBN)*, 1- 8 (2016).
5. F. Iuricich, S. Scaramuccia, C. Landi, L. De Floriani. "A discrete Morse-based approach to multivariate data analysis". In *Proceedings of the SIGGRAPH ASIA Symposium on Visualization (SA 2016)*, 1-8 (2016).
6. U. Fugacci, S. Scaramuccia, F. Iuricich, L. De Floriani. "Persistent Homology: a Step-by-step Introduction for Newcomers". In *Proceedings of the Smart Tools and Apps for Graphics - Eurographics Italian Chapter Conference*, 1-10 (2016).

7. G. Picciau, P. Simari, F. Iuricich, L. De Floriani. "Supertetras: A superpixel analog for tetrahedral mesh oversegmentation". In *Proceedings of the 18th International Conference on Image Analysis and Processing (ICIAP 2015)*, 375-386 (2015).
8. F. Iuricich and P. Simari. "Hierarchical mesh segmentation editing through rotation operations". In *Proceedings of the 18th International Conference on Image Analysis and Processing (ICIAP 2015)*, 398-409 (2015).
9. F. Iuricich, L. De Floriani, "A combined geometrical and topological simplification hierarchy for terrain analysis". In *Proceedings of the 22st International Conference on Advances in Geographic Information Systems (SIGSPATIAL)*, 493-496 (2014).
10. U. Fugacci, F. Iuricich, L. De Floriani. "Efficient Computation of Simplicial Homology Through Acyclic Matching". In *Proceedings of the 16th International Symposium on Symbolic and Numeric Algorithms for Scientific Computing (SYNASC)*, 587-593 (2014).
11. R. Fellegara, F. Iuricich, L. De Floriani and K. Weiss. "Efficient computation and simplification of discrete Morse decompositions on triangulated terrains". *22st International Conference on Advances in Geographic Information Systems (SIGSPATIAL)*, 223-232 (2014).
12. P. Magillo, L. De Floriani and F. Iuricich. "Morphologically-Aware Elimination of Flat Edges from a TIN". In *Proceedings of the 21th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (GIS '13)*, 5-8 (2013).
13. L. Comic, L. De Floriani, and F. Iuricich. "Simplification Operators on a Dimension-Independent Graph-Based Representation of Morse Complexes". In *International Symposium on Mathematical Morphology and Its Applications to Signal and Image Processing (ISMM)*, 13-24 (2013).
14. L. Comic, L. De Floriani, and F. Iuricich. "Multi-resolution cell complexes based on homology-preserving Euler operators". In *Proceedings of the 17th IAPR International Conference on Discrete Geometry for Computer Imagery (DGCI)*, 323-334 (2013).
15. L. De Floriani, F. Iuricich, P. Magillo and P. D. Simari, "Discrete Morse versus Watershed Decompositions of Tessellated Manifolds". In *International Conference in Image Analysis and Processing (ICIAP)*, 339-348 (2013).
16. L. De Floriani, R. Fellegara, F. Iuricich and K. Weiss. "A spatial approach to morphological feature extraction from irregularly sampled scalar fields". In *Proceedings of the 3rd ACM SIGSPATIAL International Workshop on GeoStreaming (IWGS)*, 40-47 (2012).
17. L. Comic, L. De Floriani, F. Iuricich, "Simplification and Multi-Resolution Representation of Morse Complexes in Arbitrary Dimensions", In *Electronic Conference Proceedings IEEE Vis,* 2012.
18. L. Comic, L. De Floriani, F. Iuricich, "Simplifying morphological representations of 2D and 3D Scalar Fields". In *Proceedings of the 19th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (GIS '11)*, 437-440 (2011).
19. L. Comic, L. De Floriani, F. Iuricich. "Building Morphological Representations for 2D and 3D Scalar Fields". In *Eurographics Italian Chapter Conference 2010*, Genova, Italy, 103-110 (2010).

Other Scholarly Publications

1. F. Iuricich, X. Xu, L. De Floriani. "Individual tree mapping from LiDAR point clouds based on topological tools". *Poster presentation at the Shape Modeling International Symposium (SMI-2017)*, Berkeley, California, USA, 2017
2. F. Iuricich, R. Fellegara, L. De Floriani. "Homology preserving simplification for top-based representations". *Symposium on Computational Geometry (SOCG 2016), Young Researchers Forum*. Boston, USA, 2016.
3. F. Iuricich, S. Scaramuccia, C. Landi, L. De Floriani. "Towards the Analysis of Multivariate Data based on Discrete Morse Theory". *Symposium on Computational Geometry (SOCG 2016), Young Researchers Forum*. Boston, USA, 2016.
4. F. Iuricich, S. Scaramuccia, C. Landi, L. De Floriani. "Computing shape descriptors based on vector-valued functions". *25th International Meshing Roundtable*, Research Notes. Washington DC, USA, 2016.
5. L. Comic, L. De Floriani, F. Iuricich, P. Magillo. "Simplification and Multiresolution Representation of Morse Complexes", *GIRPR conference*, Certosa di Pontignano, Italy 2012.

PRESENTATIONS

1. F. Iuricich, "Topology-based scientific visualization", *Clemson research symposium*, Clemson University, SC (2019).
2. F. Iuricich, "A discrete Morse-based approach for multidimensional persistent homology", *UMI-SIMAI-PTM joint meeting*, Wroclaw, Poland (2018)
3. F. Iuricich, "Towards the analysis of multivariate data based on discrete Morse theory", *Shape Analysis: Euclidean, Discrete and Algebraic Methods - Dagstuhl seminar 18422*, Dagstuhl, Germany (2018)
4. F. Iuricich, "Discrete tools for topology-based scientific visualization". *Visual Computing seminars*, Clemson, SC (2018).
5. F. Iuricich, "Topological Analysis of Biomedical Images", *Topological Image Analysis: Methods, Algorithms, Applications symposium at the SIAM conference on imaging science*, Bologna, Italy (2018)
6. F. Iuricich, "Efficient computation of multipersistent homology and applications to data analysis and visualization", *Topological Image Analysis: Methods, Algorithms, Applications symposium at the SIAM conference on imaging science*, Bologna, Italy (2018)
7. F. Iuricich "The Forman gradient: a tool for topology-based data analysis", *Data science and applied topology seminar series*, CUNY Graduate Center, New York, NY (2018)
8. F. Iuricich and R. Fellegara, "Geospatial data processing: compact representations and topological data analysis tools", *Department of Geographical Science Fall Seminar Series*, University of Maryland, College Park, MD (2016)

9. F. Iuricich, "The Forman gradient: a topological tool for the interactive analysis of data". *Invited talk*, University of Kaiserslaurten, Germany (2016).

AWARDS

- Best poster runner-up at the 28th International Conference on Advances in Geographic Information Systems
- Honorable mention award at the SMI 2015 Shape Modeling International Conference.

TEACHING
Courses Taught (since academic year 2018/2019)

- Spring2021: CPSC8030-Scientific Visualization. 7 graduate students. Overall evaluation 4.6/5.0
- Spring2021: CPSC3210-Design analysis of algorithms. 46 undergraduate students. Overall evaluation 4.3/5.0
- Fall2020: CPSC4030-6030 Data Visualization. 23 undergraduate students, 19 graduate students. Overall evaluation 4.6/5.0
- Spring2020: CPSC3210-Design analysis of algorithms. 46 undergraduate students. Overall effectiveness 4.6/5.0
- Fall2019: CPSC8040 Data Visualization. 35 graduate students. Overall effectiveness 4.7/5.0
- Spring2019: CPSC3210-Design analysis of algorithms. 31 undergraduate students. Overall effectiveness 4.7/5.0
- Spring2019: CPSC8040 Data Visualization. 40 graduate students. Overall effectiveness 4.3/5.0

January 25, 2021