

Timothy B. Luciani

836 S. Loomis St. Chicago, IL. 60607

☎ 412-265-5133 | ✉ tluciani21@gmail.com | 🌐 <http://timluciani.com> | 📱 [onorinbejasus](#)

Experience

Publicis Group - Epsilon

Chicago, IL

ASSOCIATE DIRECTOR, VISUAL ANALYTICS SCIENTIST, DECISION SCIENCES

July 2019 - Current

- Create innovative visual analytics systems that reveal, explore and explain complex patterns and phenomena from Epsilon's peta-scale and massively-dimensional digital marketing ecosystem.
- Reduce data complexity into sophisticated, interactive visual metaphors and stories that demonstrate the business value of Epsilon's platform directly to our stakeholders and global customers.
- Implement and maintain a robust production system used across the team.

University of Illinois at Chicago, Electronic Visualization Lab

Chicago, IL

GRADUATE RESEARCH ASSISTANT

August 2017 - June 2019

- Investigated patient cohort similarity based on spatial descriptors.

National Science Foundation

Chicago, IL

GRADUATE RESEARCH FELLOW

August 2015 - August 2017

- Continued research in large-scale data visualization for interdisciplinary domains.

General Dynamics - Mission Systems | Viz

Pittsburgh, PA

LEVEL 2 SOFTWARE ENGINEER

July 2014 - May 2017

- Co-authored software for emergency response coordinators to manage resources in real-time in both times of crisis and routine operation
- Architected the next-generation, in-house charting and visualization framework.

National Science Foundation

Pittsburgh, PA

GRADUATE RESEARCH FELLOW

January 2012 - July 2014

- Continued research in large-scale data visualization for interdisciplinary domains.

University of Pittsburgh

Pittsburgh, PA

UNDERGRADUATE RESEARCH ASSISTANT

May 2011 - December 2011

- Worked with researchers in Astronomy and Physics disciplines to develop tools for visualizing large-scale data
- Worked with new web-technologies such as WebGL and HTML5
- Built upon existing code bases using CUDA/OpenCL to create faster visualizations.

Education

University of Illinois at Chicago, Electronic Visualization Laboratory

Chicago, IL

PH.D. IN COMPUTER SCIENCE, EMPH. DATA VISUALIZATION

August 2015 - May 2019

- Thesis topic: *Problem-Driven Design Strategies for Scientific Data Visualization*
- **Cumulative GPA:** 3.9

Dietrich School of Arts and Sciences, University of Pittsburgh

Pittsburgh, PA

PH.D. IN COMPUTER SCIENCE

January 2012 - April 2014

- Focus on real-time GPGPU rendering and large-scale data for interdisciplinary visualizations and applications
- Transferred to University of Illinois at Chicago
- **Cumulative GPA:** 3.688

Dietrich School of Arts and Sciences, University of Pittsburgh

Pittsburgh, PA

B.S. IN COMPUTER SCIENCE

August 2008 - December 2011

- Emphasis: Mathematics, Physics
- Graduated Cum Laude
- **Cumulative GPA:** 3.5 (in major)

Honors & Awards

2017	IEEE Visual Analytics Science and Technology (VAST) Challenge, MC2 , IEEE Vis Conference	Phoenix, AZ
2017	IEEE Visual Analytics Science and Technology (VAST) Challenge, MC3 , IEEE Vis Conference	Phoenix, AZ
2016	Student Volunteer of the Year Award , IEEE Vis Conference	Baltimore, MD
2016	Honorable Mention , IEEE Vis Conference: VGTC VPG Data Visualization Contest	Baltimore, MD
2016	Cover art of JIST January/February 2016 issue , Journal of Imaging Science and Technology	
2013	Data Contest Visualization Award , IEEE BioVis Conference Data Contest	Atlanta, GA
2012	Best-Paper Runner-Up , IEEE Large-Scale Data Analysis and Visualization Conference	Seattle, WA
2012	National Science Foundation Graduate Research Fellowship Program Recipient , NSF	
2012	Winner , University of Pittsburgh, CS Dept. Digital Media Contest	Pittsburgh, PA

Publications

BOOK CHAPTERS

- B3** M. Monfort, T. Luciani, J. Komperda, B. Ziebart, F. Mashayek, G.E. Marai, “Deep learning features of interest from turbulent combustion tensor fields”, Modeling, Analysis, and Visualization of Anisotropy. 2017.
- B2** G. E. Marai, T. Luciani, A. Maries, S.L. Yilmaz, M.B. Nik, “Visual Descriptors for Dense Tensor Fields in Computational Turbulent Combustion: A Case Study”, Journal of Imaging Science and Technology, vol 60, no 1, Jan. 1, 2016.
- B1** A. Maries, T. Luciani, P.H. Pisciueneri, M.B. Nik, S.L. Yilmaz, P. Givi, G.E. Marai, “A Clustering Method for Identifying Regions of Interest in Turbulent Combustion Tensor Fields”, Visualization and Processing of Higher Order Descriptors for Multi-Valued Data. Editors: Ingrid Hotz and Thomas Schultz, Springer, pp. 1–18, 2015.

JOURNAL PUBLICATIONS

- J6** T.Luciani, A.Wentzel, B.Elghohari, H.Elhalawani, A.Mohamed, G.Canahuate, D.M.Vock, C.D.Fuller, G.E.Marai, “A spatial neighborhood methodology for computing and analyzing lymph node carcinoma similarity in precision medicine“, Journal of Biomedical Informatics, vol. 112, 2020.
- J5** A. Wentzel, P. Hanula, T. Luciani, B. Elghohari, H. Elhalawani, G. Canahuate, D. Vock, C.D. Fuller, G.E. Marai, “Cohort-based T-SSIM Visual Computing for Radiation Therapy Prediction and Exploration“, IEEE Transactions on Visualization and Computer Graphics, vol. 26, no 01, pp. 949-959, 2019.
- J4** T. Luciani, A. Burks, C. Sugiyama, J. Komperda, G.E. Marai, “Details-First, Show Context, Overview Last: Supporting Exploration of Viscous Fingers in Large-Scale Ensemble Simulations”, IEEE Transactions on Visualization and Computer Graphics, vol. 25, no. 01, pp. 1–11, Jan. 2019.
- J3** C. Ma, T. Luciani, A. Terebus, J. Liang, and G. E. Marai. “PRODIGEN: Visualizing the Probability Landscape of Stochastic Gene Regulatory Networks in State and Time Space.” BMC Bioinformatics. Feb. 2017. (*Presented at BioVis 2016*)
- J2** T. Luciani, J. Wenskovitch, K. Chen, D. Koes, T. Travers, G.E. Marai. “FixingTIM: FixingTIM: Interactive Exploration of Sequence and Structural Data to Identify Functional Mutations in Protein Families” BMC Bioinformatics, Aug. 2014.
- J1** T. Luciani, B. Cherinka, D. Oliphant, S. Myers, W.M. Wood-Vasey, A. Labrinidis, G.E. Marai. “Large-Scale Overlays and Trends: Visually Mining, Panning and Zooming the Observable Universe”, IEEE Transactions on Visualization and Computer Graphics, pp. 1-12, July 2014.

CONFERENCE PUBLICATIONS

- C6** A. Wentzel, P. Hanula, T. Luciani, B. Elghohari, H. Elhalawani, G. Canahuate, D. Vock, C.D. Fuller, G.E. Marai. “Cohort-based T-SSIM Visual Computing for Radiation Therapy Prediction and Exploration”. IEEE Scientific Visualization Conference, Vancouver, BC, CA, Oct. 2019. Under Review
- C5** T. Luciani, A. Burks, C. Sugiyama, J. Komperda, G.E. Marai, “Details-First, Show Context, Overview Last: Supporting Exploration of Viscous Fingers in Large-Scale Ensemble Simulations”, IEEE Transactions on Visualization and Computer Graphics, pp. 1–10, Oct. 2018. (*cross-listed as J5 above*)
- C5** C. Ma, T. Luciani, A. Terebus, J. Liang, and G. E. Marai. “PRODIGEN: Visualizing the Probability Landscape of Stochastic Gene Regulatory Networks in State and Time Space,” pp 1-13, IEEE BioVis 2016. (*cross-listed as J3 above*)

- C4** D. McNamara, J. Tapia, C. Ma, T. Luciani, A. Burks, J. Trelles, and G. E. Marai. "Spatial Analysis of Employee Safety Using Organizable Event Quiltmaps". In Proceedings of the IEEE VIS 2016 Workshop on Temporal and Sequential Event Analysis, Baltimore, MD, USA, Oct. 2016.
- C3** J. Wenskovitch, T. Luciani, K. Chen, G.E. Marai. "FixingTIM: Identifying Functional Mutations in Protein Families through the Interactive Exploration of Sequence and Structural Data", IEEE BioVis 2013 Data Competition, pp. 1-4, Oct. 2013. **Data Contest Visualization Award.** (*Invited to J2*).
- C2** T. Luciani, S. Myers, B. Sun, B. Cherinka, W.M. Wood-Vasey, A. Labrinidis, G.E. Marai. "Panning and Zooming the Observable Universe with Prefix-Matching Indices and Pixel-Based Overlays", IEEE Large-scale Data Analysis and Visualization Symposium, pp. 1-8, Oct. 2012. **Best-Paper Runner-Up Award.** (*expanded into J1*).
- C1** P. Neophytou, R. Gheorghiu, R. Hachey, T. Luciani, B. Sun, A. Labrinidis, G.E. Marai, P.K. Chrysanthis. "AstroShelf: Understanding the Universe through Scalable Navigation of a Galaxy of Annotations", SIGMOD 2012 Demonstrations Comp.

PEER-REVIEWED CONFERENCE SHORT PAPERS, ABSTRACTS AND SYSTEM DEMONSTRATIONS

- P10** T. Luciani, B. Elgohari, H. Elhalawani, G. Canahuate, D. M. Vock, C.D. Fuller, G.E. Marai. "Correlating Toxicity Outcomes with Spatial Patterns of Lymph Node Metastasis for Oropharyngeal Cancer Patients". American Society for Radiation Oncology, Chicago, IL, USA. Sept. 2019.
- P9** Castor, J. Borowicz, A. Burks, M. Thomas, T. Luciani, G.E. Marai, "MC2 - Mining Factory Pollution Data through a Spatial-Nonspatial Flow Approach", IEEE Visual Analytics Science and Technology (VAST) Challenge 2017 Proceedings, pp. 1-2, 2017. **VAST Challenge Honorable Mention (MC2)** in competition with 56 submissions from teams in academia, industry, and government.
- P8** V. Mahida, B. Kupiec, A. Burks, T. Luciani, G.E. Marai. "MC3 - A Web-Based Interactive Image Explorer for Temporal Analysis of Satellite Images", IEEE Visual Analytics Science and Technology (VAST) Challenge 2017 Proceedings, pp. 1-2, 2017. **VAST Challenge Honorable Mention (MC3)** in competition with 56 submissions from teams in academia, industry, and government.
- P7** A. Wentzel, P. Hanula, T. Luciani, B. Elgohari, H. Elhalawani, G. Canahuate, D. M. Vock, C.D. Fuller, G.E. Marai. "Cohort-Based Spatial Similarity can Predict Radiotherapy Dose Distribution". American Society for Radiation Oncology, Chicago, IL, USA. Sept. 2019.
- P6** T. Luciani, J. Trelles, C. Ma, A. Burks, M. Thomas, K. Bharadwaj, S. Singh, P. Hanula, L. Di, G.E. Marai. "Multi-scale Voronoi-based ACT Assessment". IEEE VGTC VPG International Data-Visualization Contest, Baltimore, MD, USA. **Honorable Mention.** Oct. 2016.
- P5** T. Luciani, C. Ma, J. Trelles, and G. E. Marai. "Developing a Data-Driven Wiki of Spatial-Nonspatial Integration Tools". In Proceedings of the IEEE VIS 2016 Workshop on Creation, Curation, Critique and Conditioning of Principles and Guidelines in Visualization (C4PGV), Baltimore, MD, USA, Oct. 2016.
- P4** A. Burks, C. Sugiyama, T. Luciani, J. Komperda, G. E. Marai. "Interactive Exploration and Tracking of Viscous Fingers in Large-Scale Ensemble Simulations." IEEE Scientific Visualization Contest, 2016.
- P3** T. Luciani, A. Maries, M. Nik, S.L. Yilmaz, "Visualization of Tensor Quantities Used in Computational Turbulent Combustion", 66 Annual Meeting of the APS Division of Fluid Dynamics, Nov., 2013.
- P2** T. Luciani, A. Maries, H. Tran, M. Nik, S.L. Yilmaz, G.E. Marai, "A Novel Method for Tracking Tensor-based Regions of Interest in Large-Scale, Spatially-Dense Turbulent Combustion Data", IEEE Visualization 2012, Poster Abstracts with System Demonstration, pp. 1-2, Oct. 2012.
- P1** T. Luciani, R. Hachey, D.Q. Oliphant, B.A. Cherinka, G.E. Marai. "Pixel-based Overlays for Navigating a Galaxy of Observations". IEEE Visualization 2011 Large-Scale Data Analysis and Visualization Symposium Poster Compendium, Oct. 2011.

Invited Presentations

A Deep Learning Approach to Identifying Shock Locations in Turbulent Combustion Tensor Fields

Dagstuhl, Germany

DAGSTUHL VISUALIZATION AND PROCESSING OF ANISOTROPY IN IMAGING, GEOMETRY, AND ASTRONOMY

Oct. 2018

- Presented proof-of-concept work on deep learning approaches in computational fluid dynamics

Developing a Data-Driven Wiki of Spatial-Nonspatial Integration Tools

Baltimore, MD

VISUALIZATION OF TENSOR QUANTITIES USED IN COMPUTATIONAL TURBULENT COMBUSTION

Oct. 2016

- Presented current efforts at organizing our survey into a public electronic repository

6th Annual Meeting of the APS Division of Fluid Dynamics

Pittsburgh, PA

VISUALIZATION OF TENSOR QUANTITIES USED IN COMPUTATIONAL TURBULENT COMBUSTION

Nov. 2013

- Presented past research on flow visualization techniques

Allegheny Observatory Public Lecture Series

Pittsburgh, PA

PANNING AND ZOOMING THE OBSERVABLE UNIVERSE WITH PREFIX-MATCHING INDICES AND PIXEL-BASED OVERLAY

July 2013

- Presented current astronomy research on visual trends in spectral data

Technology Leadership Initiative Workshop

Pittsburgh, PA

INTRODUCTION TO ANIMATION AND VIDEO GAMES TUTORIAL

May 2013

- Taught Technology Leadership Initiative Workshop (TLIW) to 20 high school students

IEEE Large-scale Data Analysis and Visualization (LDAV) Conference

Seattle, WA

PAPER TRACK

Oct. 2012

- Presented paper entry (C3) at the annual conference

Pittsburgh Science and Technology Academy

Pittsburgh, PA

SCITECH SCIENCE FORUM

Jan. 2012

- Presented research in data visualization to high school students to promote interest in CS

All-Wavelength Extended Groth Strip International Survey (AEGIS)

Pittsburgh, PA

PITTSBURGH CONFERENCE

June 2011

- Presented astronomy research to AEGIS community for feedback during their annual conference

Committees

2020 **Chair**, IEEE VIS Student Volunteer Program

Salt Lake City, UT

2019 **Chair**, IEEE VIS Student Volunteer Program

Vancouver, BC, CA

2018 **Chair**, IEEE VIS Student Volunteer Program

Berlin, Germany

2013 **Vice-President**, University of Pittsburgh, Graduate Student Organization

Pittsburgh, PA