

Jorge Poco

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Research Interests

Data Visualization, Visual Analytics, Data Science, Big Data, and Computer Graphics.

Education

- **Ph.D. Computer Science**, New York University, USA August 2011 - June 2015
Thesis: *Visual Intercomparison of Multifaceted Climate Data*
Advisor: Prof. Dr. Cláudio Silva
Committee: Juliana Freire, Enrico Bertini, Jean-Daniel Fekete
- **Ph.D. Student, Computer Science**, University of Utah, USA August 2010 - May 2011
Advisor: Prof. Dr. Cláudio Silva
I transferred to New York University to continue my Ph.D. studies.
- **M.S. Computer Science**, University of Sao Paulo, Brazil August 2008 - August 2010
Thesis: *Neuronal Fibers Visualization Using Multi-Dimensional Projection*
Advisor: Prof. Dr. Rosane Minghim
Committee: João Comba, Agma Traina
- **B.E. System Engineering** (Computer Science profile) April 2003 - April 2008
National University of San Agustin, Perú

Professional Experience

- *Assistant Professor* at San Pablo Catholic University. Jun 2017 – Present
Research and Innovation Center in Computer Science
- *Postdoctoral Researcher* at University of Washington. Aug 2015 – Jul 2017
Supervisor: Dr. Jeffrey Heer
Interactive Data Lab
- *Research Assistant* at New York University. Aug 2011 – June 2015
Supervisor: Dr. Cláudio Silva
- *Research Intern* at Xerox Research Center Webster. Summer 2013
Supervisors: Dr. Saurabh Kataria and Dr. Tong Sun
- *Research Participant* at Oak Ridge National Laboratory. Summer 2012
Supervisor: Dr. Robert Cook
Environmental Sciences Division

- *Junior Technical Staff* at Kitware Inc.
Supervisor: Dr. Berk Geveci
Paraview Team
Summer 2011

- *Research Assistant* at University of Utah.
Supervisor: Dr. Cláudio Silva
Aug 2010 – May 2010

- *Software Engineer Intern* at Google Inc.
Supervisor: Keir Mierle
Google Map Team
Spring 2010

- *Software Engineer Intern* at Google Inc.
Supervisor: Dr. Mei Han
Computer Vision Research Team
Winter 2008

- *Software Engineer* at zAgile Inc.
Supervisor: Sanjiva Nath
Apr 2007 – Oct 2007

- *Developer* at zAgile Inc.
Supervisor: Sanjiva Nath
Jan 2007 – Apr 2007

- *Developer* at Cooperativa de Ahorro y Crédito Alto Selva Alegre.
CoopSoft System
Jan 2006 – Dec 2006

- *Undergraduate Teaching Assistant: Data Structures.*
National University of San Agustín
Jun 2005 – Oct 2005

Honors and Awards

- Certificate of Excellence: For consistent high performance in the Computer Science Program. Awarded by NYU Polytechnic Institute of Engineering, 2015.
- Doctoral Colloquium, IEEE VIS 2014.
- Master Fellowship: Coordenadoria de Aperfeiçoamento de Pessoal de Nível Superior (CAPES - Brazil).
- First place during my undergraduate studies at the School of System Engineering. National University of San Agustín. Arequipa-Perú. From 2003 to 2008.
- Honorable Mention: *ACM-ICPC South America Contest w/o Brazil, Perú.* 2005, 2006 and 2007.
- Best Paper Award at the 5th Congress on Informatics & System in South America, Arequipa-Perú, 2006.
- First place in academic contests among all Military High Schools in Perú. 2000 and 2001.

Refereed Journal Publications

- [1] *Extracting and Retargeting Color Mappings from Bitmap Images of Visualizations*; **J. Poco**, A. Mayhua, and J. Heer. IEEE Transactions on Visualization and Computer Graphics, *to be presented*, 2017.
- [2] *Reverse-Engineering Visualizations: Recovering Visual Encodings from Chart Images*; **J. Poco** and J. Heer. Computer Graphics Forum, 36(3): 353–363, 2017.
- [3] *Reducing the Analytical Bottleneck for Domain Scientists: Lessons from a Climate Data Visualization Case Study*; A. Dasgupta, **J. Poco**, E. Bertini, and C. T. Silva. Computing in Science & Engineering, 18(1): 92–100, 2016.

- [4] *Exploring Traffic Dynamics in Urban Environments Using Vector-Valued Functions*; **J. Poco**, H. Doraiswamy, H. Vo, J. Comba, J. Freire, and C. T. Silva. *Computer Graphics Forum*, 34(3): 161–170, 2015.
- [5] *Bridging Theory with Practice: An Exploratory Study of Visualization Usage and Design for Climate Model Comparison*; A. Dasgupta, **J. Poco**, Y. Wei, B. Cook, E. Bertini and C. T. Silva. *IEEE Transactions on Visualization and Computer Graphics*, 21(9): 996–1014, 2015.
- [6] *Riding from Urban Data to Insight Using New York City Taxis*; J. Freire, C. T. Silva, H. T. Vo, H. Doraiswamy, N. Ferreira and **J. Poco**. *IEEE Data Engineering Bulletin*, 37(4): 43–55, 2014.
- [7] *Visual Reconciliation of Alternative Similarity Spaces in Climate Modeling*; **J. Poco**, A. Dasgupta, Y. Wei, W. Hargrove, C. Schwalm, D. Huntzinger, R. Cook, E. Bertini, and C. T. Silva. *IEEE Transactions on Visualization and Computer Graphics*, 20(12): 1923–1932, 2014.
- [8] *SimilarityExplorer: A Visual Inter-Comparison Tool for Multifaceted Climate Data*; **J. Poco**, A. Dasgupta, Y. Wei, W. Hargrove, C. Schwalm, R. Cook, E. Bertini, and C. T. Silva. *Computer Graphics Forum*, 33(3): 341–350, 2014.
- [9] *Visual Exploration of Big Spatio-Temporal Urban Data: A Study of New York City Taxi Trips*; N. Ferreira, **J. Poco**, H. T. Vo, J. Freire and C. T. Silva. *IEEE Transactions on Visualization and Computer Graphics*, 19(12): 2149–2158, 2013.
- [10] *UV-CDAT: Analyzing Climate Datasets from a User’s Perspective*; E. Santos, **J. Poco**, Y. Wei, S. Liu, R. Cook, D. N. Williams, and C. T. Silva. *Computing in Science & Engineering*, 15(1): 94–103, 2013.
- [11] *Ultrascale Visualization of Climate Data*; D. N. Williams, T. Bremer, C. Doutriaux, J. Patchett, S. Williams, G. Shipman, R. Miller, D. R. Pugmire, B. Smith, C. Steed, E. W. Bethel, H. Childs, H. Krishnan, P. Prabhat, M. Wehner, C. T. Silva, E. Santos, D. Koop, T. Ellqvist, **J. Poco**, B. Geveci, A. Chaudhary, A. Bauer, A. Pletzer, D. Kindig, G. L. Potter and T. P. Maxwell. *IEEE Computer*, 46(9): 68–76, 2013.
- [12] *Employing 2D Projections for Fast Visual Exploration of Large Fiber Tracking Data*; **J. Poco**, D. M. Eler, F. V. Paulovich and R. Minghim. *Computer Graphics Forum*, 31(3pt2): 1075–1084, 2012.
- [13] *A Framework for Exploring Multidimensional Data with 3D Projections*; **J. Poco**, R. Etemadpour, F. V. Paulovich, T. V. Long, P. Rosenthal, M. C. F. Oliveira, L. Linsen and R. Minghim. *Computer Graphics Forum*, 30(3): 1111–1120, 2011.
- [14] *Piecewise Laplacian-Based Projection for Interactive Large Data Exploration and Organization*; F. V. Paulovich, D. M. Eler, **J. Poco**, C. P. Botha, R. Minghim and L. G. Nonato. *Computer Graphics Forum*, 30(3): 1091–1100, 2011.

Refereed Workshop & Conferences Publications

- [15] *Using Maximum Topology Matching to Explore Differences in Species Distribution Models*; **J. Poco**, H. Doraiswamy, M. Talbert, J. Morissette, and C. T. Silva. *IEEE SciVis*, 2015.
- [16] *Visual Inter-Comparison of Multifaceted Climate Data*; **J. Poco**. *Doctoral Colloquium, IEEE VIS 2014*.
- [17] *Integrating Data into Scientific Workflows for Terrestrial Biosphere Model Evaluation through Brokers*; Y. Wei, R. B. Cook, F. Du, A. Dasgupta, **J. Poco**, D. Huntzinger, C. Schwalm, E. Boldrini, M. Santoro, J. Pearlman, F. Pearlman, S. N., and S. J. Khalsa. *American Geophysical Union*, 2013.
- [18] *Global Net Land Carbon Sink: Results from the Multi-Scale Synthesis and Terrestrial Model Intercomparison Project (MsTMIP)*; D. Huntzinger, C. Schwalm, A. Michalak, R. B. Cook, A. R. Jacobson, K. Schaefer, Y. Wei, A. Dasgupta, **J. Poco**, and MsTMIP modeling teams. *American Geophysical Union*, 2013.

- [19] *Face Tracking and Recognition using Hybrid Techniques for Each Process Phase*; **J. POCO**, Proceedings of the 5th Congress on Informatics & System in South America, Tacna-Perú. 2006. In Spanish. **BEST-PAPER**
- [20] *A Proposal for Face Tracking and Recognition in Image Sequences*; J. Chuquitaype, J. Mamani, **J. POCO**. Proceedings of the Peruvian Computing Week, Arequipa-Perú. 2006. In Spanish.

Technical Reports

- [21] *UV-CDAT Three-Year Comprehensive Report*; A. Bauer, A. Chaudhary, B. Geveci, H. Krishnan, D. Bader, T. Bremer, C. Doutriaux, D. Fedor-Thurman, M. Harris, E. Leung, R. McCoy, J. Ahrens, C. Canada, P. Jones, B. Nouanesengsy, J. Patchett, S. Williams, T. Maxwell, G. Potter, C. DeLuca, R. O'Kuinghtons, R. Oehmke, D. Pugmire, G. Shipman, B. Smith, C. Steed, B. Burnett, A. Dasgupta, T. Ellqvist, D. Koop, E. Marques, **J. POCO**, R. Rampin, C. Silva, H. Vo, D. Kindig, A. Pletzer, C. Christensen, S. Kumar, V. Pascucci, G. Scorzelli and B. Summa. 2013.
- [22] *A Fast Projection Technique and its Applications to Visualization of Large Data Sets*; F. Paulovich, D. Eler, **J. POCO**, L. Nonato, C. P. Botha, R. Minghim. University of Sao Paulo, N°349. 2010.

Theses

- [23] *Visual Intercomparison of Multifaceted Climate Data*; **Ph.D. thesis**, New York University, USA, 2015.
- [24] *Neuronal fibers visualization using multi-dimensional projection*; **M.Sc. thesis**, University of Sao Paulo, Brazil, 2010. In Portuguese.

Papers in Preparation

- [25] *Studying the Effect of Color Scales on Visual Comparison of Climate Models*; to be submitted to TVCG.

Posters

- *Visual Inter-Comparison of Multifaceted Climate Models*; **J. POCO**, A. Dasgupta, Y. Wei, R. B. Cook, E. Bertini, and C. Silva. Moore-Sloan Data Science Environment. 2014.
- *Visual Exploration of Big Spatio-Temporal Urban Data: A Study of New York City Taxi Trips*; N. Ferreira, **J. POCO**, H. T. Vo, J. Freire and C. T. Silva. Moore-Sloan Data Science Environment. 2014.
- *SimilarityExplorer: A Visual Inter-Comparison Tool for Multifaceted Climate Data*; Y. Wei, R. B. Cook, **J. POCO**, A. Dasgupta, B. Hargrove, C. Schwalm, E. Bertini, and C. Silva. ORNL CCSI Science Advisory Board Meeting. 2014.
- *A Critical Evaluation of Visualization Design for Terrestrial Biosphere Model Inter-Comparison*; A. Dasgupta, **J. POCO**, Y. Wei, R. B. Cook, D. Huntzinger, E. Bertini, and C. T. Silva. EVA Working Group, DataONE. 2013.
- *Building Fundamental Components for the Integrated Model Intercomparison Framework (IMIF)*; F. Du, Y. Wei, R. Cook, A. Dasgupta, **J. POCO**. EVA Working Group, DataONE. 2013.
- *Visualization of Correlations in NYC Urban Data*; **J. POCO**, S. Kataria, and T. Sun. XRCW Summer Researcher Poster Session. 2013.

- *Provenance-Aware Earth Science Data Exploration, Visualization, and Analysis Based on UV-CDAT Workflows*; Y. Wei, R. B. Cook, **J. Poco**, A. Dasgusta, B. Ludaescher, C. Schwalm, D. Huntzinger, and A. Michalak. ORNL CCSI Science Advisory Board Meeting. 2013.
- *Exploring and Analyzing Model Output using Visualization Tools*; **J. Poco**, Y. Wei, S. Liu, C. T. Silva, and R. B. Cook. DataONE All-Hands Meeting. 2012.

Invited Talks

- *Using Maximum Topology Matching to Explore Differences in Species Distribution Models*;
Joint Statistical Meetings, Recent Advances in Information Visualization, Chicago, IL, July 2016.
- *Using Visualization to Analyze and Understand Large Spatio-Temporal Data*
IBM Thomas J. Watson Research Center, Yorktown Heights, NY, February 2015.
Tableau Research, Seattle, WA, February 2015.
- *Climate Data Visualization*
NYU Poly School of Engineering Research Expo, NY, May 2014.
- *Using Taxi Data to Estimate and Explore Uncertain Traffic Patterns in Large Urban Centers*
VII Simposio de Computación Gráfica y Procesamiento de Imágenes (SCGI), Perú, December–2013.
- *Visualization of Correlations in NYC Urban Data*
Seminar at Xerox Research Group, Rochester, NY, October 2013.
- *Provenance-Enabled Exploration and Analysis MsTMIP Data*
EVA Working Group Meeting, Albuquerque, NM, February 2013.
- *UV-CDAT: Exploring and Analyzing MsTMIP Dataset*
All Hands Meeting, Albuquerque, NM, August 2012.
- *Uncertainty in Isocontours*
V Simposio de Computación Gráfica y Procesamiento de Imágenes (SCGI), Perú, December 2011.
- *Estimating Depth Complexity of Meshes using Dual-Ray Transformations*
IV Simposio de Computación Gráfica y Procesamiento de Imágenes (SCGI), Perú, December 2010.
- *Visualizing Tensorial Data Sets*
III Simposio de Computación Gráfica y Procesamiento de Imágenes (SCGI), Perú, December 2009.
- *Removing Objects in Images*
II Simposio de Computación Gráfica y Procesamiento de Imágenes (SCGI), Perú, December 2008.

Software contributions

- **SimilarityExplorer**. SimilarityExplorer is an exploratory visualization tool that facilitates similarity comparison tasks across both space and time through a set of coordinated multiple views.
Project website: <http://vgc.poly.edu/projects/VisualReconciliation/>
- **TaxiVis**. TaxiVis is a visual analytic tool to explore and analyze New York City Taxi Trips.
Available at: <https://github.com/ViDA-NYU/TaxiVis>
- **Ultrascale Visualization Climate Data Analysis Tools (UV-CDAT)**. UV-CDAT is a powerful and complete front-end to a rich set of visual-data exploration and analysis capabilities well suited for climate-data analysis problems.
Available at: <https://github.com/UV-CDAT>

- **Projection Explorer (Pex)**. Pex is a program to explore data sets using multi-dimensional projection. My work was to extend this tool to support 3D projections and add new interaction features.
Available at: <http://infoserver.lcad.icmc.usp.br/infovis2/Tools>
- **VisPipeline**. It is a general tool where users can create their own pipelines to explore data sets using many projection algorithms. It supports documents, images and neuronal fibers exploration.
Available at: <http://infoserver.lcad.icmc.usp.br/infovis2/Tools>

Professional Activities

Program Committee

- SIBGRAPI – 7th Workshop on Visual Analytics, Information Visualization and Scientific Visualization (SIBGRAPI – WVIS) 2017
- CLEI - Latin American Symposium on Computer Graphics, Virtual Reality, and image Processing (CLEI–SLCGRVPI) 2015-2016
- SIBGRAPI - Workshop of Undergraduate Works Conference on Graphics (SIBGRAPI – WUW) 2013
- International Conference of the Peruvian Computer Society (CSPC) 2010-2011

Reviewer

- Sensors Journal 2016
- ACM Human Factors in Computing Systems (CHI) 2017
- ACM Computer-Supported Cooperative Work (CSCW) 2017
- ACM User Interface Software and Technology (UIST) 2016
- Information Visualization Journal 2016
- EuroVis 2015-2016
- IEEE Information Visualization (InfoVis) 2015-2017
- IEEE Scientific Visualization (SciVis) 2015-2017
- IEEE Visual Analytics Science and Technology (VAST) 2015-2017
- Conferencia Latinoamericana en Informática (CLEI) 2015-2016
- Journal on Image and Video Processing (EURASIP) 2015
- PeerJ Computer Science 2016
- IEEE International Conference on Big Data (IEEE BigData) 2014
- CompuScientia 2012-2014
- Conference on Graphics, Patterns and Images (SIBGRAPI) 2012-2014
- International Conference of the Peruvian Computer Society (CSPC) 2009-2011
- Simposio de Computación Gráfica y Procesamiento de Imágenes 2009-2011

Problem Setter

- Peruvian Programming Contest (CPP) 2011, 2013

Student Volunteer

- IEEE VIS 2013-2014
- Latin American Computing Conference (CLEI) 2004
- Workshop Iberoamericano de Ingeniería de Requisitos y Desarrollo de Ambientes de Software (IDEAS) 2004

Master Defense Committees

- Germain Garcia Zanabria, “Un Método Radial Interactivo Para la Exploración Visual de Datos en Alta Dimensión”, Universidad Católica San Pablo (UCSP), October 21, 2015

Member

- Institute of Electrical and Electronics Engineers (IEEE)

Organizer

- SCGI 2016 Peruvian Symposium in Computer Graphics and Imaging with *O. Florez*

Computer Skills

- Programming: C/C++, JAVA, Python, OpenGL, GPU programming languages (GLSL, Cg), CUDA, Javascript, Matlab, Octave, R.
- Systems: UNIX (Linux and OS X), Windows

Language Skills

- Spanish: **Native**.
- English: **Very good**. *Fluent read, I can understand, speak and write*
- Brazilian Portuguese: **Very good**. *Fluent read, I can understand, speak and write*
- French: **Basic**. *I can read, understand and write*

References

- Dr. Jeffrey Heer +1 (206) 543-2350
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Computer Science and Engineering
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