Paola **Valdivia**

Research engineer
Télécom Paris

Overview

My work focuses on visual data analysis, combining information visualization, HCI methodologies, and machine-learning algorithms to create new analysis methods and tools for large datasets. In my projects, I make use of recent web technologies to facilitate the usage and dissemination of our new visual analysis tools.

Professional experience

- **Research Engineer** — France
  Télécom Paris — Jun 2020 - *present*
  - Currently working on a technique to overcome artifacts on multidimensional projections for large datasets.
    Technologies: JavaScript, Angular, D3, Python, Flask.
- **Postdoctoral Researcher** — France
  Inria Saclay — Jun 2018 - May 2020
  - Prototype for visualizing dynamic hypergraphs with focus on usability.
    Technologies: Dart, Web canvas and Python.
  - Prototype for creating clusters in networks in a mixed-initiative fashion.
    Technologies: Dart, Web canvas, Python and Flask.
- **Research Consultant** — Brazil
  Visibilia — Dec 2018 - Jul 2019
  - Prototype for visualizing recommendation of business regions.
    Technologies: JavaScript, React, MapGl, D3 and Python.
- **Visiting PhD Student** — France
  Inria Saclay — Aug 2016 - Jul 2017
- **Visiting PhD Student** — USA
  New York University — Nov 2015
- **Software Developer** — Peru
  Peru Credit Bank (BCP) — Aug 2010 - Jul 2011

Education

- **University of São Paulo** — Brazil
  Ph.D. Computer Science — *Dec 2013 - May 2018*
  Dissertation title: *Graph signal processing for visual analysis and data exploration.*
  - Network and spatio-temporal data analysis using graph signal processing.
  - **Technologies:** D3, Angular, JavaScript, Python, Pandas, Matlab.
- **University of São Paulo** — Brazil
  M.Sc. Computer Science — *Aug 2011 - Nov 2013*
- **San Pablo Catholic University** — Peru
  B.S. Informatics Engineering (Computer Science) — *2005 - 2010*
  - top student in class

Expertise

visual analytics
information visualization
data science
HCI

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Technologies

D3	Vega
JavaScript	Dart
Mapbox-GL	WebGl
React	Angular
Python	R
Pandas	SciPy
HTML5	CSS

Foreign Languages

english	*advanced*
french	*intermediate*
spanish	*native*
portuguese	*intermediate*

Software prototypes and contributions

- **PK-clustering**. Prototype for creating meaningful clusters in social networks.
  Implemented in Dart using web canvas and a Flask server. https://aviz.fr/pkclustering/
- **Paohvis**. Prototype for visualizing dynamic hypergraphs.
  Implemented in Dart using web canvas. http://www.aviz.fr/paohvis/
- **Waviz**. Prototype for analyzing spatio-temporal data based on the graph wavelet transform.
  Implemented in JavaScript using D3. https://paolavaldivia.github.io/waviz/
- **Siion**. Prototype for showing the best potential regions for opening a business in the city of São Paulo.
  Implemented in Javascript using React and Mapbox http://siion.visibilia.net.br
- **Dynamic Network Explorer**. Prototype for analyzing dynamic networks based on the graph wavelet transform.
  Implemented in JavaScript using the framework AngularJS and D3. https://paolavaldivia.github.io/dynnet_wavelet/
- **Networkcube**. Improvement of the matrix visualization of networks in this system. Implemented in Typescript using WebGL and D3. http://networkcube.net/

Publications

- **Valdivia, P.**, Buono, P., Plaisant C., Dufournaud N. and Fekete, J.-D. (2020). *Analyzing Dynamic Hypergraphs with Parallel Aggregated Ordered Hypergraph Visualization*. To appear in IEEE Transactions on Visualization and Computer Graphics.
- Ferreira, V., Valejo, A., **Valdivia, P.** and Valverde-Rebaza, J. (2019) *Exploiting Geographical Data to improve Recommender Systems for Business Opportunities in Urban Areas*. To appear in Proceedings of BRACIS 2019.
- Dias, M.D, **Valdivia, P.**, Petronetto, F., Nonato, L. G. (2018). *Graph Spectral Filtering for Network Simplification* . In Graphics, Patterns and Images (SIBGRAPI), 2018 31st SIBGRAPI-Conference. IEEE.
- Col, A. D., **Valdivia, P.**, Petronetto, F., Dias, F., Silva, C. T., and Nonato, L. G. (2017). *Wavelet-based visual analysis of dynamic networks*. IEEE Transactions on Visualization and Computer Graphics.
- Col, A. D., **Valdivia, P.**, Petronetto, F., Dias, F., Silva, C. T., and Nonato, L. G. (2017). *Wavelet-based visual analysis for data exploration*. Computing in Science Engineering.
- Dias, F., Mansour, M. R., **Valdivia, P.**, Cousty, J., and Najman, L. (2017). *Watersheds on Hypergraphs for Data Clustering*. In International Symposium on Mathematical Morphology and Its Applications to Signal and Image Processing. Springer, Cham.
- **Valdivia, P.**, Dias, F., Petronetto, F., Silva, C. T., and Nonato, L. G. (2015). *Wavelet-based visualization of time-varying data on graphs*. In Visual Analytics Science and Technology (VAST), 2015 IEEE Conference.
- Søren Knudsen, Jan Aerts, Daniel Archambault, Remco Chang, Jean-Daniel Fekete, **Valdivia, P.** et al. (2019) *Unifying the framework of Multi-Layer Network and Visual Analytics. Visual Analytics of Multilayer Networks Across Disciplines*, Dagstuhl Reports.
- **Valdivia, P.**, Cedrim, D., Petronetto, F., Paiva, A., and Nonato, L. G. (2013). *Normal Correction towards Smoothing Point-Based Surfaces*. In Graphics, Patterns and Images (SIBGRAPI), 2013 26th SIBGRAPI-Conference. IEEE.

Short papers

- **Valdivia, P.**, Buono, P., Plaisant C., Dufournaud N. and Fekete, J.-D. (2018). *Using Dynamic Hypergraphs to Reveal the Evolution of the Business Network of a 17th Century French Woman Merchant*. VIS 2018-3rd Workshop on Visualization for the Digital Humanities.

Posters

- **Valdivia, P.**, Buono, P., and Fekete, J.-D. (2017). *Hypenet: Visualizing Dynamic Hypergraphs*. In Puig, A. P. and Isenberg, T., editors, EuroVis 2017 - Posters. The Eurographics Association.
- Dimara, E., **Valdivia, P.**, and Kinkeldey, C. (2017). *DcPAIRS: A Pairs Plot Based Decision Support System*. In Puig, A. P. and Isenberg, T., editors, EuroVis 2017 - Posters. The Eurographics Association.