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Jorge Saldivar

Data Scientist Fellow, University of Chicago

Education

PhD Information and Communication Technologies, University of Trento, Italy *2017*
Dissertation: Empowering Online Idea Management for Civic Engagement with Public Displays and Social Networking Services

Informatics Engineering, Catholic University of Asuncion, Paraguay *2010*

Research Interests

Crowdsourcing, Collective Intelligence, E-Participation, Machine Learning, Social Computing

Academic and Research Appointments

Data Scientist Fellow, Data Science for Social Good, Computation Institute, University of Chicago, USA *May 2018 - present*

Research Fellow, Department of Electronics and Informatics, Catholic University "Nuestra Señora de la Asunción," Asunción, Paraguay *Feb 2016 - May 2018*

PhD Researcher, Department of Information Engineering and Computer Science, University of Trento, Italy *Nov 2011 - Nov 2015*

Visiting Scholar, Center for Information Technology Research in the Interest of Society (CITRIS), University of California, Berkeley, CA, USA *Jul - Oct 2014*

Visiting Researcher, Information Analysis Division, Hewlett-Packard Laboratories, Palo Alto, California, USA *Oct - Dec 2013*

Recent Publications

Journal Articles

Jorge Saldivar, Cristhian Parra, Marcelo Alcaraz, Rebeca Arteta, and Luca Cernuzzi. "Civic Technology for Social Innovation: A Systematic Literature Review." In *Computer Supported Cooperative Work (CSCW) Journal, pp. 1-39*, Springer, 2018.

Jorge Saldivar, Carlos Rodriguez, Florian Daniel, Fabio Casati, and Luca Cernuzzi. "On the (in)effectiveness of the Share/Tweet button: A study in the context of idea management for civic participation." In *IEEE Internet Computing, vol. 21, issue 5, pp. 38-47*, IEEE, 2017.

Tanja Aitamurto, Hélène Landemore, and *Jorge Saldivar*. "Unmasking the crowd: participants' motivation factors, expectations, and profile in a crowdsourced law reform." In *Information, Communication & Society, pp. 1-22*, 2016.

Jorge Saldivar, Carla Vairetti, Carlos Rodríguez, Florian Daniel, Fabio Casati, and Rosa Alarcón. "Analysis and improvement of business process models using spreadsheets". In *Information Systems 57: 1-19*, Elsevier, 2015.

Conference Papers

Tanja Aitamurto, Shuo Zhou, Sukolsak Sakshuwong, *Jorge Saldivar*, Yasamin Sadeghi, Amy Tran, and Nathalie Mathe. "Sense of Presence, Attitude Change, Perspective-Taking and Usability in First-Person Split-Sphere 360°Video". In *Proceedings of the 2018 CHI Conference*, ACM, 2018 (to be presented).

Tanja Aitamurto and *Jorge Saldivar*. "Motivating Participation in Crowdsourced Policymaking: The Interplay of Epistemic and Interactive Aspects". *Proceedings of the ACM Human-Computer Interaction (CSCW), vol. 1, no. 2, article 18,*, ACM, 2017.

Tanja Aitamurto and *Jorge Saldivar*. "Examining the Quality of Crowdsourced Deliberation: Respect, Reciprocity and Lack of Common-Good Orientation". In *Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems, pp. 2314-2321*, ACM, 2017.

Jorge Saldivar, Marcos Báez, Carlos Rodríguez, Gregorio Convertino, and Grzegorz Kowalik. "Idea Management Communities in the Wild: An exploratory study of 166 online communities". In *Proceedings of the 17th International Conference on Collaboration Technologies and Systems (CTS), pp. 81-89*, IEEE, 2016.

Jorge Saldivar, Florian Daniel, Fabio Casati, and Luca Cernuzzi. "Idea Management in Social Networks: A Study of how to Tap into the Ideas of Facebook Communities". In *Proceedings of the 17th International Conference on Collaboration Technologies and Systems (CTS), pp. 3-10*, IEEE, 2016.

Tanja Aitamurto, Kaiping Chen, Ahmed Cherif, *Jorge Saldivar*, and Luis Santana. "Civic CrowdAnalytics: Making sense of crowdsourced civic input with big data tools". In *Proceedings of the 20th International Academic Mindtrek Conference, pp. 86-94*, ACM, 2016

Tanja Aitamurto, *Jorge Saldivar*, and Juho Salminen. "Self-selection In Crowdsourced Democracy: A Bug Or A Feature?". In *GROUP Conference*, ACM, 2014.

Jorge Saldivar, Cristhian Parra, Carlos Rodríguez, Luca Cernuzzi, and Vincenzo D'Andrea. "Participa: Fostering civic participation for public services innovation". In *13th Participatory Design Conference*, 2014.

Gianluca Schiavo, Marco Milano, *Jorge Saldivar*, Tooba Nasir, Massimo Zancanaro, and Gregorio Convertino. "Agora 2.0: Enhancing civic participation through a public display". In *Proceedings of the 6th International Conference on Communities and Technologies (C&T), pp. 46-54*, ACM, 2013.

Research Projects

Participa

Promoting civic participation in the innovation of public services and policies

- Designed and implemented a tool that integrates crowdsourcing idea technologies with general purpose social networks, like Facebook
- Implemented a K-means algorithm to cluster similar crowdsourced civic contributions
- Applied a K-means algorithm to discover patterns in the collective behavior of online innovation communities
- Contributed to the execution of a real-case process of participatory public service innovation in Asunción, the capital city of Paraguay ($\sim$ 200 participants)
- **Co-authored four scientific publications on the topics of Civic Technologies, Crowdsourcing, Virtual Reality, and Collective Intelligence**

Research methods applied: case studies - surveys - participatory design workshops - interviews - SLR

The Finnish Experiment

Designing, implementing, and studying processes of crowdsourced policymaking

- Applied exploratory data analysis techniques to study the profile of the participants of crowdsourced policy-making processes
- Employed non-parametric statistical tests (Wilcox, Spearman, Chi-square, Kruskal-Wallis, Friedman) to examine change in the motivation factors that drive people to crowdsourced civic participation processes
- Used Logistic Regression to predict the odds of participants to stay engaged in crowdsourcing processes
- **Co-authored four scientific publications on the topics of Crowdsourcing for Democracy, Collective Intelligence, and Machine Learning**

Research methods applied: surveys

The California Report Card

Enhancing communication between elected authorities and the public

- Modeled, designed, and implemented a Twitter app that allows citizens of California to propose suggestions on issues that merit the attention of the government
- Contributed to the execution of a real-case process of crowdsourced policymaking in the state of California ($\sim$ 10,000 participants)
- **Co-authored a scientific publication on the topic of Crowdsourcing for Democracy**

Research methods applied: prototyping

Agora 2.0

Enhancing Civic Participation through Public Displays

- Designed and developed a platform that integrates a crowdsourcing idea system with public displays
- Conducted a real-case process of participatory public service innovation in the city of Trento, Italy
- **Co-authored a scientific publication on the topic of E-Participation**

Research methods applied: field studies - observational studies - interviews

BPM4People

Business Process Modeling for Participatory Enterprises, Organizations, and Public Administration Bodies

- Conducted a literature review study on methodologies, techniques, and approaches to constructing tools for modeling and deploying of business processes that will be executed collaboratively by people on social networks
- Applied multivariate linear regression analysis to study effectiveness of current social sharing practices
- **Co-authored two scientific publications on the topic of E-Participation**

Research methods applied: controlled experiments

Ianus

Platform for the Simplification, Re-organization and Improvement of Business Processes

- Designed and developed of models and systems to improve the communication between business analysts and developers and facilitate the analysis of business processes
- **Co-authored a scientific publication on topic Business Process Management**

Research methods applied: usability tests - surveys - prototyping

Teaching Experiences

Catholic University of Asuncion, Paraguay *2016, 2006 - 2007*

- *Instructor.* Course: Data Science with social impact
- *Research mentor.* Cotutor of the undergraduate final project: Interest-based civic engagement
- *Teaching assistant.* Course: Algorithms and data structures with the programming language C

University of Trento, Italy *2014 - 2015*

- *Teaching assistant.* Course: Web Programming using J2EE technologies

- *Research mentor.* Cotutor of the master thesis: Analyzing and visualizing citizen opinions collected from social networks

Polytechnic School, National University of Asuncion, Paraguay *2010*
- *Lecturer.* Course: Development for Sugar Operating System

Awards & Honors

- Eric & Wendy Schmidt Data Science for Social Good Summer Fellowship. University of Chicago, 2018 (among 750 candidates)
- Best Paper Award. Academic Mindtrek Conference, October, 2016
- PhD student fellowship. University of Trento, Trento, Italy, 2011-2014
- PhD on the move scholarship. Trento RISE Association, Trento, Italy, 2013
- FC-UPM-IB scholarship for post-graduated studies at Polytechnic University of Madrid, Spain, 2011

Collaboration in Research Communities

- Program Committee, International Conference on Collaboration Technologies and Systems, CTS 2016

- Reviewed scientific articles and papers for the following conferences and journals: WWW (Int. Conf. on World Wide Web), ISOC (Int. Conf. on Service Oriented Computing), CTS, ICEIS (Int. Conf. on Enterprise Information Systems), Academic Mindtrek, JSMO (Journal of Social Media for Organization)

Experiences as Software Engineer

Software Engineer
OLPC project, NGO Paraguay Educa *2008-2011*
- Contributed to the development of open-source educational software, such as Poll and Labyrinth
- Developed the educational game Club de Othello XO (30,000 downloads)
- Developed an open-source fingerprint attendance system (9,000 downloads)

Front-End Developer
AISA, Asunción, Paraguay *2007*
- Collaborated in the implementation of the front-end of an ERP system that controls the selling, billings, transportations, and clients of the company

Technical Skills

Data Analytics and Machine Learning. Exploratory data analysis (Correlation, Location and Variability estimation, Visualization), statistical experiments and significance testing (Hypothesis tests, t-Tests, Confidence Intervals, ANOVA, Chi-Square, Wilcox, Kruskal-Wallis), regression (Simple Linear Regression, Multiple Linear Regression), classification (Logistic Regression), clustering (K- means). R (ggplot2), Python (pandas, scikit-learn, numpy, matplot).

Software and Programming Languages. Python, SQL, Javascript, HTML, CSS, Java, Ruby

Scripting. Linux/Unix

Languages

Spanish (Native), English (Full professional proficiency), Italian (Limited working proficiency)