

# Jorge Saldivar

DATA SCIENTIST FELLOW, THE UNIVERSITY OF CHICAGO, UNITED STATES

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EDUCATION	<b>PhD Information and Communication Technologies</b> , University of Trento, Italy <span style="float: right;">2017</span> <i>Dissertation: Empowering Online Idea Management for Civic Engagement with Public Displays and Social Networking Services</i>
	<b>Informatics Engineering</b> , Catholic University of Asuncion, Paraguay <span style="float: right;">2010</span>

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RESEARCH INTERESTS	Crowdsourcing, Collective Intelligence, E-Participation, Machine Learning, Social Computing
ACADEMIC AND RESEARCH APPOINTMENTS	<b>Data Scientist Fellow</b> , Data Science for Social Good, Computation Institute, University of Chicago, USA <span style="float: right;"><i>May 2018 - present</i></span>
	<b>Research Fellow</b> , Department of Electronics and Informatics, Catholic University “Nuestra Señora de la Asunción,” Asunción, Paraguay <span style="float: right;"><i>Feb 2016 - May 2018</i></span>
	<b>PhD Researcher</b> , Department of Information Engineering and Computer Science, University of Trento, Italy <span style="float: right;"><i>Nov 2011 - Nov 2015</i></span>
	<b>Visiting Scholar</b> , Center for Information Technology Research in the Interest of Society (CITRIS), University of California, Berkeley, CA, USA <span style="float: right;"><i>Jul - Oct 2014</i></span>
	<b>Visiting Researcher</b> , Information Analysis Division, Hewlett-Packard Laboratories, Palo Alto, California, USA <span style="float: right;"><i>Oct - Dec 2013</i></span>

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RECENT PUBLICATIONS	<b>Journal Articles</b>
	Jorge Saldivar, Cristhian Parra, Marcelo Alcaraz, Rebeca Arteta, and Luca Cernuzzi. “Civic Technology for Social Innovation: A Systematic Literature Review.” In <i>Computer Supported Cooperative Work (CSCW) Journal</i> , 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 <i>IEEE Internet Computing</i> , 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 <i>Information, Communication &amp; Society</i> , 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 <i>Information Systems 57: 1-19</i> , Elsevier, 2015.
	<b>Conference Papers</b>
	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 <i>Proceedings of the 2018 CHI Conference</i> , 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.

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## RESEARCH PROJECTS

### **Supporting Proactive Diabetes Screenings to Improve Health Outcomes**

*Building predictive models to help identify patients at risk of developing diabetes*

- Research on the effectiveness of the diabetes screening guidelines currently being used in the United States
- Extract and transform raw medical data into tidy data ready to be loaded into a clean ER data scheme
- Development and selection of features to be use in the predictive models
- Implementation, validation, and evaluation of predictive models using Decision Tress, Random Forest, and Support Vector Machine algorithms

### **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 (~ 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 (Wilcoxon, 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 (~ 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

- *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

#### PRESENTATIONS

##### Conference Presentations

- *"Idea Management in Social Networks: A Study of how to Tap into the Ideas of Facebook Communities,"* International Conference on Collaboration Technologies and Systems (CTS), Orlando, Florida, USA, October 2016
- *"Idea Management Communities in the Wild: An exploratory study of 166 online communities,"* International Conference on Collaboration Technologies and Systems (CTS), Orlando, Florida, USA, October 2016

##### Invited Talks

- *"Civic CrowdAnalytics: Machine Learning para el análisis de contribuciones cívicas,"* JIT-Cita Conference, Asunción, Paraguay, November 2017
- *"Empowering Online Idea Management for Civic Engagement with Public Displays and Social Networking Services,"* Charles III University of Madrid, Madrid, Spain, May 2017
- *"Civic Technologies,"* Catholic University of Asuncion, Paraguay, April 2017
- *"Civic CrowdAnalytics,"* VTech, Asunción, Paraguay, December 2016

##### Invited Panelist

- *"Gamify Democracy,"* World Forum For Democracy, Strasbourg, France, November 2016

#### 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

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## 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, Wilcoxon, Kruskal-Wallis), regression (Simple Linear Regression, Multiple Linear Regression), classification (Logistic Regression), clustering (K-means). R (ggplot2), Python (pandas, scikit-learn, numpy, matplotlib).

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

**Scripting.** Linux/Unix

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## LANGUAGES

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