

Alejandro Benito-Santos, PhD

Curriculum Vitae

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"The sleep of reason produces monsters" - Goya

Short Bio

Hello! I am Alejandro, a **researcher and lecturer** at the Department of Computer Science and Automation at the University of Salamanca (Spain). I used to work as a freelance consultant but after some time I went back to university to start a PhD in data visualization and visual analytics. I completed my **BSc in Computer Engineering** at the same university, from which I also obtained an **MSc in Intelligent Systems** in 2016. Right before that, I used to be an iOS developer in London (UK). There, I worked for some startups and also for well-established companies, where I developed a taste for UX and interface design. Now I am a member of the Visual Analytics Group VisUSAL (within the Recognized Research Group GRIAL), where I completed my **PhD thesis** "Supporting Methodology Transfer in Visualization Research with Literature-Based Discovery and Visual Text Analytics" under the supervision of Dr. Roberto Therón in November 2020 obtaining the grade of Summa Cum Laude. In my thesis, I developed novel visual text analytics methods to **assist interdisciplinary researchers in finding visualizations that can be reused across different knowledge domains** such as digital humanities, sports science, linguistics or bioinformatics. To this aim, I combined several state-of-the-art techniques from the fields of **NLP, recommender systems, scientometrics, and information theory and visualization** like VSMs, literature-based discovery, SVD, I obtained the grade of Summa Cum Laude for my work.

My other research interests lie in the areas of **human-computer interaction (HCI), design, statistics and education**. During my PhD, I had the chance to **teach HCI and introduction to python programming for statisticians** at the Faculty of Sciences of Salamanca in the past, which I enjoyed a lot. More recently (2020-2021), I gave two courses (introduction to programming and computational tools, respectively) in the Bioinformatics and Computational Biology Specialization of the University of Salamanca.

Finally, I try to be an active member of the scientific community, and I reviewed for a variety of journals and conferences, such as IEEE VIS, the ADHO Digital Humanities Conferences (DH), IEEE Access, or the ACM Journal on Computing and Cultural Heritage (JOCCH), among others.

Educational Background

2016
2020

PhD Visual Analytics, *Visual Analytics and Information Visualization Group* (hereafter VisUSAL) - *Department of Computer Science and Automation, University of Salamanca, Salamanca, Spain.*

2015
2016

MSc Intelligent Systems, *Department of Computer Science and Automation, University of Salamanca, Salamanca, Spain.*

2008
2010

MSc Computer Engineering, *Department of Informatics. University of Valladolid, Valladolid, Spain.*

2004
2008

BSc Computer Engineering, *Department of Computer Science and Automation. University of Salamanca, Salamanca, Spain.*

Theses

PhD Thesis

TITLE Supporting Methodology Transfer in Visualization Research with Literature-Based Discovery and Visual Text Analytics
ADVISOR Professor Dr. Roberto Therón Sánchez.
GRADE Cum Laude
INSTITUTION University of Salamanca (Spain).

MSc Thesis

TITLE La Visualización de Datos en las Humanidades Digitales (Data Visualization in Digital Humanities) [BSTS16]
ADVISOR Professor Dr. Roberto Therón Sánchez.
GRADE A with Hons.
INSTITUTION University of Salamanca (Spain).

BSc Thesis

TITLE Cheexe: A P2P-distributed Picture Database.
ADVISORS Professor Dr. José Rafael García-Bermejo Giner.
GRADE A
INSTITUTION University of Salamanca (Spain).

Research Projects

2018
2021

PROVIDEDH: Progressive Visual Decision-Making in Digital Humanities, <https://providedh.eu/>, **IP:** Roberto Therón Sánchez - theron@usal.es, **Funding agency:** European Union (CHISTERA), Spanish Ministry of Economic Affairs and Digital Transformation. PCIN-2017-064.

I am responsible for designing and implementing uncertainty-aware visual analytics solutions for the digital humanities data analysis pipeline. I also act as a proxy to coordinate the efforts of the other 3 partners (TCD Dublin, PSNC Poznan, ACDH-OEAW Vienna) involved in the project. Lately, I've been experimenting a lot with **visualization, NLP (word2vec, LDA, LSA)** and other machine-learning models (using libraries such as **scikit, nltk or scipy**) in interactive **notebooks** (Jupyter, Observable). I have also made prototypes in other visualization frameworks like **altair, plot.ly, vega-lite, d3.js, seaborn and bokeh**.

2016
2019

ExploreAT: Exploring Austria's Culture through the Language Glass, <https://www.oeaw.ac.at/acdh/projects/explore-at/>, **IP:** Eveline Wandl-Vogt - eveline.wandl-vogt@oeaw.ac.at, **Funding agency:** Austrian Center for Digital Humanities - Austrian Academy of Sciences.

In this project, I worked with experts in lexicography to create visual analytics tools for exploring historical lexicographic artifacts (such as dictionaries) according to different dimensions (spatial, temporal, textual). During the time the project lasted, I had the chance to learn new technologies such as **React**, **D3.js**, **Python** and **TEI-XML**. In addition, I led a team of interdisciplinary researchers in a participatory design experience with young girls at exclusion risk of a serious game (built in **Unity**) aimed at promoting good dietary habits.

Research Visits

2019

Visiting Researcher, *Poznan Supercomputing and Network Centre (PSNC)*, Institute of Bioorganic Chemistry of the Polish Academy of Sciences, Poznan, Poland, August - November (4 months) 2019.

Funding agency: European Union (CHISTERA), Spanish Ministry of Economic Affairs and Digital Transformation.

2016

Short-Term Scientific Mission, *Austrian Centre for Digital Humanities (ACDH)*, Austrian Academy of Sciences, Vienna, Austria, 6-11 November 2016.

Funding agency: European Network of e-Lexicography through COST H2020.

Teaching Experience

Teaching Assistant

2021

Computational Tools for Bioinformatics: UNIX, regular expressions and Shell scripting, *Department of Computer Science and Automation*, University of Salamanca, Spain.

Specialist Degree in Bioinformatics and Computational Biology

2020

Introduction to Python Programming, *Department of Computer Science and Automation*, University of Salamanca, Spain.

Specialist Degree in Bioinformatics and Computational Biology

2018

Human-Computer Interaction, *Department of Computer Science and Automation*, University of Salamanca, Spain.

BSc Computer Engineering (3rd course)

2017

Informatics I, *Department of Computer Science and Automation*, University of Salamanca, Spain.

BSc Statistics (1st course)

Learning Resources

2021

Computational Tools for Bioinformatics: UNIX, regular expressions and Shell scripting - Specialist Degree in Bioinformatics and Computational Biology, *Development of course syllabus and learning infrastructure*, <https://github.com/ale0xb/materiales-bio-unix>.

2020

Introduction to Python Programming, *Development of course syllabus and learning infrastructure - Specialist Degree in Bioinformatics and Computational Biology*, <https://github.com/ale0xb/materiales-bio-python>.

2017

Informatics I - BSc Statistics (1st course), *Development of course syllabus and learning infrastructure*, Evaluated a methodology for teaching programming at introductory levels based on Jupyter Notebooks, Published results at JENUI, the Spanish Conference of Lecturers in Computer Science [BST19].
<https://github.com/grialusal/materiales-informatica-i>

Invited Talks

2017

Exposing Cultural Heritage through Computer Screens: The Role of User-Centered Design in the Digital Humanities., *The final conference of the ENeL COST Action.*, European Network of e-Lexicography., Leiden, The Netherlands.

Other Professional Experiences

2013
2016

Freelance Digital Consultant, *Self-Employed*, London and Madrid, I worked as a freelance digital consultant for some years, implementing integral solutions for clients in Spain, UK and USA..

2013

Senior UX Designer and Mobile Developer, *BetVictor*, Gibraltar, I was responsible for coordinating a team of 4 mobile developers to port the existing codebase to iPad devices. I worked in tight collaboration with the Design Team to re-engineer the whole user experience of the platform. I also implemented a user analytics framework during my time there..

2012
2013

Junior UX Designer and Mobile Developer, *Floxx Media Ltd.*, London, I worked at the Wayra-sponsored startup Floxx as a Mobile Developer and UX Designer. I learned cocos2d (an Objective-C-based game engine and framework) and implemented other solutions in HTML, CSS and Javascript..

2011
2012

UX Designer and Mobile Developer Intern, *Concise Media Design*, London, United Kingdom.

This was my first job after graduating. I was responsible for implementing bespoke mobile applications for live events in a fleet of +1000 iPads. I used HTML, CSS, Javascript and Objective-C.

Languages

Spanish Native

English Fluent

TOEFL Test 109/120 2008 (C1)

Awards and Grants

ARGO Professional Internship

London, UK, 2011. Awarded by the Spanish Ministry of Education

Publications

- [BDG⁺21] Alejandro Benito-Santos, Amelie Dorn, Antonio G. Losada Gómez, Thomas Palfinger, Roberto Therón Sánchez, and Eveline Wandl-Vogt. Playing Design: A Case Study on Applying Gamification to Construct a Serious Game with Youngsters at Social Risk. *Journal on Computing and Cultural Heritage*, 14(2):13:1–13:19, April 2021.
- [BDS19] Alejandro Benito-Santos, Alejandro Rodríguez Díaz, and Roberto Therón Sánchez. Exposing Uncertainty on the Historical Name Normalization Task. In *Proceedings of the Seventh International Conference on Technological Ecosystems for Enhancing Multiculturality*, TEEM'19, pages 795–803, New York, NY, USA, October 2019. Association for Computing Machinery.
- [BDT⁺18] Alejandro Benito, Amelie Dorn, Roberto Therón, Eveline Wandl-Vogt, and Antonio Losada. Shedding Light on Indigenous Knowledge Concepts and World Perception through Visual Analysis. In *Digital Humanities 2018 Book of Abstracts*, pages 537–538, Mexico City, Mexico, 2018. Alliance of Digital Humanities Organizations.
- [BG17] Alejandro Benito and Alisa Goikhman. Exposing Cultural Heritage through Computer Screens: The Role of User-centered Design in the DH. In *WG4: Lexicography and Lexicology from a Pan-European Perspective. The Final Conference of the ENeL COST Action. European Network of e-Lxicography.*, 18 September, Leiden, Netherlands 2017.
- [BLGTS⁺20] A. Benito-Santos, Antonio G. Losada Gómez, Roberto Theron Sánchez, Eveline Wandl-Vogt, and Amelie Dorn. An Interactive Visualization of the Historical Dictionary of Bavarian Dialects in Austria. In *LingVis: Visual Analytics for Linguistics*, pages 181–212. CSLI Publications, Stanford University, USA, center for the study of language and information edition, 2020.
- [BS20] A. Benito-Santos and R. T. Sánchez. A Data-Driven Introduction to Authors, Readings, and Techniques in Visualization for the Digital Humanities. *IEEE Computer Graphics and Applications*, 40(3):45–57, May 2020.
- [BSLT⁺18] Alejandro Benito Santos, Antonio G Losada, Roberto Therón, Amelie Dorn, and Eveline Wandl-Vogt. Creating Meaningful Narratives in Collections of Historical Lexical Data. *GI_Forum 2018*, 6:50–57, 2018.
- [BST19] Alejandro Benito, Rodrigo Santamaría, and Roberto Therón. Evaluación de una metodología novel basada en cuadernos interactivos para el aprendizaje de la programación en Python. *Actas de las Jornadas sobre Enseñanza Universitaria de la Informática*, 4(0), 2019.
- [BSTS16] Alejandro Benito Santos and Roberto Therón Sánchez. *Visualización de Datos En Humanidades Digitales*. Tesis de Master, Universidad de Salamanca, España, 2016.
- [BSTS19] Alejandro Benito Santos and Roberto Theron Sánchez. La Visualización de Datos en la Lectura Digital Moderna: Pasado, Presente y Futuro. In *Libro, Lectores y Lectura Digital*, number 2 in Metodologías Humanísticas en la Era Digital, pages 223–241. Ediciones Instituto Juan Andrés, 2019.

- [BT20a] A. Benito-Santos and R. Therón. GlassViz: Visualizing Automatically-Extracted Entry Points for Exploring Scientific Corpora in Problem-Driven Visualization Research. In *2020 IEEE Visualization Conference (VIS)*, pages 226–230, October 2020.
- [BT20b] A. Benito-Santos and R. Therón. Pilaster: A Collection of Citation Metadata Extracted From Publications on Visualization for the Digital Humanities. In *2020 IEEE 5th Workshop on Visualization for the Digital Humanities (VIS4DH)*, pages 24–29, October 2020.
- [BTL⁺17] Alejandro Benito, Roberto Therón, Antonio Losada, Eveline Wandl-Vogt, and Amelie Dorn. Exploring Lemma Interconnections in Historical Dictionaries. In *Proc. 2nd Workshop on Visualization for the Digital Humanities (VIS4DH)*, 2017.
- [BTL⁺18] Alejandro Benito-Santos, Roberto Theron, Antonio Losada, Jaime E. Sampaio, and Carlos Lago-Peñas. Data-Driven Visual Performance Analysis in Soccer: An Exploratory Prototype. *Frontiers in Psychology*, 9, 2018.
- [BTS19] A. Benito-Santos and R. Therón Sánchez. Cross-domain Visual Exploration of Academic Corpora via the Latent Meaning of User-Authored Keywords. *IEEE Access*, 7:98144–98160, 2019.
- [BTS20] Alejandro Benito-Santos and Roberto Therón Sánchez. Defragmenting Research Areas with Knowledge Visualization and Visual Text Analytics. *Applied Sciences*, 10(20):7248, January 2020.
- [DWA⁺18] Amelie Dorn, Eveline Wandl-Vogt, Yalemisew Abgaz, Alejandro Benito Santos, and Roberto Therón. Unlocking cultural conceptualisation in indigenous language resources: Collaborative computing methodologies. In Claudia Soria, Laurent Besacier, and Laurette Pretorius, editors, *Proceedings of the LREC 2018 Workshop CCURL 2018*, pages 19–22, Miyazaki, Japan, May 2018. ELRA.
- [GDB⁺17] Caitlin Gura, Amelie Dorn, Alejandro Benito, Eveline Wandl-Vogt, and Antonio G. Losada. Co-Designing Innovation Networks for Cross-Sectoral Collaboration on the Example of exploreAT! In *Proceedings of the 5th International Conference on Technological Ecosystems for Enhancing Multiculturality*, page 86. ACM, 2017.
- [LTB16] Antonio G Losada, Roberto Therón, and Alejandro Benito. Bkviz: A Basketball Visual Analysis Tool. *IEEE Computer Graphics and Applications*, 36(6):58–68, 2016.
- [PBST⁺19] Carlos Lago Peñas, Alejandro Benito Santos, Roberto Theron, Antonio Losada, Marián Fernández Villarino, and Jaime E. Sampaio. Data-driven visual performance analysis in soccer: An exploratory prototype. *Motricidade; Ribeira de Pena*, 15:144–145, 2019.
- [RDBD⁺19] Alejandro Rodríguez Díaz, Alejandro Benito-Santos, Amelie Dorn, Yalemisew Abgaz, Eveline Wandl-Vogt, and Roberto Therón. Intuitive Ontology-Based SPARQL Queries for RDF Data Exploration. *IEEE Access*, 7:156272–156286, 2019.

- [TBSL18] Roberto Therón, Alejandro Benito, Rodrigo Santamaría, and Antonio G. Losada. Toward Supporting Decision-making Under Uncertainty in Digital Humanities with Progressive Visualization. In *Proceedings of the Sixth International Conference on Technological Ecosystems for Enhancing Multiculturality*, TEEM'18, pages 826–832, New York, NY, USA, 2018. ACM.
- [TSBSVLG19] Roberto Therón Sánchez, Alejandro Benito-Santos, Rodrigo Santamaría Santamaría Vicente, and Antonio Losada Gómez. Towards an Uncertainty-Aware Visualization in the Digital Humanities. *Informatics*, 6(3):31, September 2019.

Full list: <https://scholar.google.es/citations?user=kG15qkMAAAAJ>