# Javier Sanz-Cruzado Puig

## Personal details

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## Statement

I am interested in the scientific and mathematical aspects of Computer Science, which I am presently applying in the social network analysis and recommender systems fields. I find specific motivation in formalizing real-world problems into mathematical statements and developing principled solutions that result in effective methods when brought back to the application domain.

My current research is in the scope of social networks and recommender systems. In this area, I am currently focusing on people-to-people recommendation. On the one hand, I am interested in devising new contact recommendation algorithms per se. On the other, I am considering new perspectives beyond accuracy in the development and evaluation of recommendation methods, such as the effect of link recommendation on the evolution of structural network properties and the flow of information through the network.

## Professional Experience

**PhD Student** *June 2015 to May 2021*

Information Retrieval Group (http://ir.ii.uam.es)
Universidad Autónoma de Madrid, Spain

- Research on people recommendation in social networks, social network analysis (link prediction, structural metrics, information diffusion), recommendation objectives beyond accuracy and multi-armed bandits for recommendation.
- Lab teaching of "Information search and mining", 4$^{th}$ year BSc on Computer Science, January to May 2018, 2019 and 2020.
- Lab teaching of "Analysis of algorithms", 2$^{nd}$ year BSc on Computer Science, September 2019 to January 2020.
- BSc thesis supervision:
  - Miranda, B. "Information Diffusion Modeling on Twitter", June 2018.
  - Amor, A. "Link prediction and recommendation in social networks", June 2019.
  - Lopez, E. "Multi-armed Bandits in Recommendation", June 2019.

**Visiting researcher** *May 2019 to July 2019*

Terrier Team (http://terrierteam.dcs.gla.ac.uk/)
University of Glasgow, Scotland, United Kingdom

- Research on information retrieval models for contact recommendation in social networks.
- **Supervisors:** Craig Macdonald and Iadh Ounis.

**Programmer** *June 2013 to August 2013*

Every View S.L., Madrid, Spain

Spanish Language Route Project

- Development of the project webpage, using Joomla, MySQL and PHP, mainly web services and payment platforms.
- Development of computer game functionalities, using Unity3D and C#.

## Education

**PhD in Computer Science and Telecommunication** *October 2016 to May 2021*

Universidad Autónoma de Madrid

**PhD thesis:** "Contact Recommendation in Social Networks: algorithmic models, diversity and network evolution".

**Score: Outstanding (*Cum Laude* mention)**

**Supervisor:** Prof. Pablo Castells (pablo.castells@uam.es)

**MSc in ICT Research and Innovation** *September 2015 to February 2017*

Universidad Autónoma de Madrid

**Specialization:** Computational Intelligence

**GPA: 9.32/10**

**4 Mentions of Honor:** "Information Retrieval", "Machine Learning: Theory and Applications", "Numerical and data intensive computing" and "Temporal Information Processing".

**MSc Thesis:** "Contact recommendation: Effects on the evolution of social networks"

**MSc in Computer Science** *September 2015 to February 2017*

Universidad Autónoma de Madrid

**GPA: 9.52/10**

**4 Mentions of Honor:** "Advanced topics in Networking and Internet", "Embedded, distributed and ubiquitous systems", "Graphics, Multimedia and Virtual Environments", "Interactive Systems Development".

**Double BSc in Computer Science and Mathematics** *September 2010 to June 2015*

Universidad Autónoma de Madrid

**GPA: 9.23/10** (ranked in top 3% of my year)

**28 Mentions of honor**: including "Artificial Intelligence", "Neurocomputing", "Information Search and Mining" and "Fundamentals of Machine Learning".

**BSc Thesis: "**Metasearch engine with session management and interleaving A/B testing".

## Publications

An updated list of publications can be accessed from https://javiersanzcruza.github.io/pubs.

- Sanz-Cruzado, J., Castells, P., Macdonald, C., Ounis, I. Effective contact recommendation in social networks by adaptation of information retrieval models. *Information Processing & Management* 57(5), September 2020, Article 102285. https://doi.org/10.1016/j.ipm.2020.102285
- Sanz-Cruzado, J., Macdonald, C. Ounis, I., Castells, P. Axiomatic Analysis of Contact Recommendation Methods in Social Networks: an IR Perspective. *42nd European Conference on Information Retrieval (ECIR 2020)*. Online, April 2020, pp. 175-190.

https://doi.org/10.1007/978-3-030-45439-5_12

- Sanz-Cruzado, J., Castells, P., López, E. A simple multi-armed nearest-neighbor bandit for interactive recommendation. *13th ACM Conference on Recommender Systems (RecSys 2019)*. Copenhaguen, Denmark, September 2019, pp. 358-362.
  https://doi.org/10.1145/3298689.3347040
- Sanz-Cruzado, J., Castells, P. Beyond Accuracy in Link Prediction. *3rd Workshop on Social Media for Personalization and Search (SoMePeAs 2019) at the 41st European Conference on Information Retrieval (ECIR 2019)*. Cologne, Germany, April 2019.
  https://doi.org/10.1007/978-3-030-52485-2_9
- Sanz-Cruzado, J., Castells, P. Information Retrieval Models for Contact Recommendation in Social Networks. *41st European Conf. on Information Retrieval (ECIR 2019)*. Cologne, Germany, April 2019, pp. 148-163.
  https://doi.org/10.1007/978-3-030-15712-8_10
  Sanz-Cruzado, J., Castells, P. Contact Recommendations in Social Networks. In: S. Berkovsky, I. Cantador, D. Tikk (Eds.): *Collaborative Recommendations: Algorithms, Practical Challenges and Applications*. World Scientific Publishing, November 2018. ISBN: 978-981-3275-35-5, pp. 519-570.
  https://doi.org/10.1142/9789813275355_0016
- Sanz-Cruzado, J., Castells, P. Enhancing Structural Diversity in Social Networks by Recommending Weak Ties. *12th ACM Conference on Recommender Systems (RecSys 2018)*. Vancouver, Canada, October 2018, pp. 233-240.
  https://doi.org/10.1145/3240323.3240371
- Sanz-Cruzado, J., Pepa, S.M., Castells, P. Recommending Contacts in Social Networks Using Information Retrieval Models. *5th Spanish Conference on Information Retrieval (CERI 2018)*. Zaragoza, Spain, June 2018, pp. 19:1-19:8.
  https://doi.org/10.1145/3230599.3230619
- Sanz-Cruzado, J., Pepa, S.M., Castells, P. Structural Novelty and Diversity in Link Prediction. *9th International Workshop on Modelling Social Media (MSM 2018) at The Web Conference (WWW 2018)*. Lyon, France, April 2018.
  https://doi.org/10.1145/3184558.3191576

## Grants, scholarships and awards

**Excellence scholarship in BSc Studies**, Regional Government of Madrid. *2012 to 2015 (every year)*
**Research scholarship in MSc studies**, Universidad Autónoma de Madrid. *October 2015 – October 2016*
**PhD scholarship (FPI Grant)**, Universidad Autónoma de Madrid. *March 2017 to September 2018*
**PhD scholarship (FPU Grant)**, Spanish Government. *September 2018 to May 2021*

## Research interests

**Social Networks:** analysis, link prediction, information diffusion.
**Information Retrieval:** recommender systems, evaluation, novelty and diversity.
**Reinforcement learning:** multi-armed bandits.

## Technical skills

**Programming languages:** Java, C, Python, PHP, MatLab.
**Databases:** MySQL, PostgreSQL.
**Operating systems:** Microsoft Windows (XP, Vista, 7, 8, 10), Unix (Ubuntu, CentOS).
**Other tools:** Maven, Git.
**General purpose software:** LaTeX, Microsoft Office (Word, Excel & PowerPoint).

## Languages

**Spanish:** Native Speaker.

**English:** Working proficiency.

- **Certificate of Advanced English** – Cambridge University *July 2018*
  Level 2 Certificate in ESOL International.
  Common European Framework of Reference (CEFR) C1 Level.
- **Graded Examination in Spoken English, Grade 11** – Trinity College London *June 2008*
  Level 2 Certificate in ESOL International (Speaking and Listening).
  CEFR C1.2 level.

**French:** Basic notions.

## Other activities

**Students' representation:**

- Course delegate *2011 to 2016*
- BSc students' general delegate *2014 to 2015*
- Students' representative in "New Curricula" commission *2014 to 2015*
- PhD students' representative in Computer Science department council *2017 to 2021*

**RankSys framework:** Java 8 Recommender Systems framework (http://ranksys.org). *Since 2017*
Maintenance of the framework and development of new functionalities.

**Reviewer**

- **Reviewer of** ACM Transactions on Information Systems journal (ACM TOIS)
- **Reviewer of** the User Modeling and User-Adapted Interaction journal (UMUAI)
- **Reviewer for** the latest-breaking results track for the 14th ACM Conference on Recommender Systems (RecSys 2020)
- **Subreviewer for** The Web Conference 2021 (TheWebConf 2021)
- **Short paper program committee member for** the 44th International ACM *SIGIR* Conference on Research and Development in Information Retrieval (SIGIR 2021)
- **Program committee member for** the 15th ACM Conference on Recommender Systems (RecSys 2021)

## References

**Prof. Pablo Castells**
Universidad Autónoma de Madrid
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