# MARIANO MAISONNAVE

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## SUMMARY

**Computer science postdoc at Cape Breton University** with 8+ years of training in Natural Language Processing (NLP) and Machine Learning (ML).

**Interest and previously worked with**: high-recall information retrieval, information extraction, event detection and term weighting in texts. Familiar with state-of-the-art ML and NLP technologies and libraries (spaCy, Transformers, HuggingFace, Keras, Scikit-learn, and others). Studied and used causality, time series, and econometric tools. Worked on building interpretable causal graphs from news articles.

## EDUCATION

**Ph.D. in Computer Science**, Universidad Nacional del Sur, Argentina — Apr 2017 — Oct 2021
GPA: 9.86/10
Thesis: Variable selection and causal discovery from newspaper article texts. [link (Spanish)]

> *Lead computer science researcher in a multidisciplinary project (economy and computer science) that aimed at building causal graphs from news article texts. The project involved using Natural Language Processing Tools to extract variables from news article texts and using Econometric tools to detect causality between those variables.*
> Publications: J1, J2, J3, J4, C2, C3

**Computer Systems Engineer**, Universidad Nacional del Sur, Argentina — Mar 2011 — Oct 2016
GPA: 8.58/10
Final project: Feature engineering techniques evaluated on supervised learning methods.

## SELECTED SKILLS (NOT EXHAUSTIVE)

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| **Languages** | Python | Java | C | C# | SQL |
| **Sysadmin Skills** | Bash and Bash Scripting | VIM | Git | Docker | SSH/SFTP |
| **Python Libraries** | Pandas | NumPy | Matplotlib | Jupyter Notebook | Seaborn |
| **ML Libraries** | Scikit-learn | Keras | HuggingFace | SciPy | SentenceTransformers |
| **NLP Libraries** | NLTK | spaCy | Transformers | re (Regular Expressions) | Gensim |

## WORK EXPERIENCE

**Postdoctoral Fellow** — Aug 2023 — Present
Faculty of Computer Science, Cape Breton University — *Sidney, Canada*

> Project title: **Machine learning applied to health care data**.
> Responsabilities: (1) Developing interpretable machine learning models to support experts in the health care domain. (2) Writing scientific publications and research grants; participating in conferences. (3) Supervising undergrad and graduate students in artificial intelligence-related research projects.

**Postdoctoral Employee** — Nov 2021 — Jul 2023
Faculty of Computer Science, Dalhousie University — *Halifax, Canada*

> Project title: **Visual analytics for text-intensive social science research on immigration**
> *Lead computer science researcher in multidisciplinary (computer science and social science) applied research project that aims to enable novel text-intensive research in social science through the development of novel computer science tools. The project currently involves high-recall information retrieval on a large corpus of news articles and the organization of the results through topic modelling.*

**Servicios Tecnológicos de Alto Nivel (STAN)** (*Highly skilled transfer services*) May 2022 — Present
Global News Group & Universidad Nacional del Sur *Bahía Blanca, Argentina*

Project title: **Real-time event and story detection from news articles**
*Co-directing two graduated students in an applied research project. The project aims at analyzing news article texts and grouping them into cohesives stories which we further organize into chapters.*

**Servicios Tecnológicos de Alto Nivel (STAN)** (*Highly skilled transfer services*) Oct 2020 — Present
BID-INTAL & Universidad Nacional del Sur *Bahía Blanca, Argentina*

Project title: **Foreign direct investment monitoring, detection and collection from Twitter**
*Co-directing a graduated student in an applied research project. The project aims at Detecting Foreign Direct Investment (FDI) mentions in tweets, followed by the extraction of structured information about the detected FDI.*

## JOURNAL PUBLICATIONS

J1 **Maisonnave, M.**, Delbianco, F., Tohmé, F., Milios, E. and Maguitman, A.G., **2022**. *Causal graph extraction from news: a comparative study of time-series causality learning techniques.* PeerJ Computer Science, 8, p.e1066. [link]

J2 **Maisonnave, M.**, Delbianco, F., Tohmé, F., Maguitman, A. and Milios, E., **2022**. *Detecting ongoing events using contextual word and sentence embeddings.* Expert Systems with Applications, 209, p.118257. [link]

J3 **Maisonnave, M.**, Delbianco, F., Tohmé, F. and Maguitman, A., **2021**. *Assessing the behavior and performance of a supervised term-weighting technique for topic-based retrieval.* Information Processing & Management, 58(3), p.102483. [link]

J4 **Maisonnave, M.**, Delbianco, F., Tohmé, F.A. and Maguitman, A.G., **2019**. *A flexible supervised term-weighting technique and its application to variable extraction and information retrieval.* Inteligencia Artificial, 22(63), pp.61-80. [link]

## CONGRESS PUBLICATIONS

C1 Ramirez-Orta, J., Sabando, M.V., **Maisonnave, M.** and Milios, E., **2022**. *MALNIS at IberLEF-2022 DETESTS Task: A Multi-Task Learning Approach for Low-Resource Detection of Racial Stereotypes in Spanish.* In Proceedings of the Iberian Languages Evaluation Forum (IberLEF 2022). CEUR Workshop Proceedings, CEUR-WS. org. [link]

C2 **Maisonnave, M.**, Delbianco, F., Tohmé, F., Maguitman, A.G. and Milios, E.E., **2020**, September, *Assessing Causality Structures learned from Digital Text Media*, In Proceedings of the ACM Symposium on Document Engineering 2020 (pp. 1-4) [link]

C3 **Maisonnave, M.**, Delbianco, F., Tohmé, F.A. and Maguitman, A.G., **2018**, November, *A Supervised Term-Weighting Method and its Application to Variable Extraction from Digital Media*, In XIX Simposio Argentino de Inteligencia Artificial (ASAI)-JAIIO 47. [link]

## CONGRESS PRESENTATIONS

P1 **Maisonnave, M.**, **2022**, November, *Computer-Assisted Text-Intensive Social Science Research on Immigration*, In the $26^{th}$ Biennial Canadian Ethnic Studies Association Conference.

P2 **Maisonnave, M.**, **2019**, June, *Detección de Textos Similares a través de una Técnica de Agrupamiento Basada en Densidad* (*Text similarity dectection through a Density-Based Clustering Technique*), Comunicación en XV Congreso Dr. Antonio Monteiro.

## PARTICIPATION IN SHARED TASKS

**A multi-task learning approach for low-resource detection of racial stereotypes in Spanish** 2022
Dalhousie University *Halifax, Canada*

*Participation in the DETESTS shared task, which was part of IberLEF 2022. The shared tasks involved detecting and classifying stereotypes in sentences from comments posted in Spanish in response to different online news articles related to immigration.*
Publications: C1

## CONTRIBUTED OPEN-SOURCE DATASETS

D1 **Maisonnave, M.**; Delbianco, F.; Tohme, F.; Maguitman, A.; Milios, E. (2023), "Electricity Energy Consumption in the Gran Buenos Aires (metropolitan area) from 2012 to 2018 — CAMMESA data ", Mendeley Data, V1, doi : 10.17632/92g8n7pjp2.1

D2 **Maisonnave, M.**, Delbianco, F., Tohmé, F., Maguitman, A., Milios, E., **2020**, *Event Detection Dataset*, Mendeley Data, V1, doi: 10.17632/7d54rvzxkr.1

D3 **Maisonnave, M.**, Delbianco, F., Tohmé, Fernando; Maguitman, A., **2019**, *Economic Relevant News from The Guardian*, Mendeley Data, V3, doi: 10.17632/yt8j2f3hpp.3

## AWARDS AND SCHOLARSHIPS

- Three-year winner of the Google Latin America Research Award (Google LARA) (2019, 2020 and 2021). Project: "*Learning Causal Models from Digital Media.*"
- Recipient of the Emerging Leaders in the Americas Program (ELAP) scholarship, 2018. Funding for a research stay at Dalhousie University from December 2018 to April 2019.
- Recipient of a five-year scholarship to pursue a doctorate in computer science, 2017-2022. Granted by the Argentinian National Scientific and Technical Research Council (CONICET).
- Recipient of the Encouragement of Scientific Vocations Scholarship (EVC-CIN), 2015 and 2016. Funding for undergrad students to conduct a part-time research project.

## TEACHING

**Professor** 2020
Universidad Nacional del Sur *Bahía Blanca, Argentina*
*Course:* Analysis and Problem Solving

**Head of Teaching Assistants** 2019 — Present
Universidad Nacional del Sur *Bahía Blanca, Argentina*
*Course:* Object Oriented Programming

**Teaching Assistant** 2015 — Present
Universidad Nacional del Sur *Bahía Blanca, Argentina*
Courses

- Object Oriented Programming
- Embedded Systems
- Computer Networks
- Computer Organization
- Analysis and Problem Solving
- Formal Languages and Automata Theory

## UNIVERSITY SERVICE

**Mentoring Program — Coordinator** 2021
Universidad Nacional del Sur *Bahía Blanca, Argentina*

**Mentoring Program — Mentor** 2015 — 2020
Universidad Nacional del Sur *Bahía Blanca, Argentina*

**Computer Science Student Union — Treasurer** 2016
Universidad Nacional del Sur *Bahía Blanca, Argentina*

**Computer Science Departmental Council — Student Elected Member** 2015
Universidad Nacional del Sur *Bahía Blanca, Argentina*

**Computer Science Student Union — Vice President** 2015
Universidad Nacional del Sur *Bahía Blanca, Argentina*

**Computer Science Academic Affairs Commission — Student Member** 2015
Universidad Nacional del Sur *Bahía Blanca, Argentina*

## CONTACT REFERENCES

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**Evangelos E. Milios**
University Research Professor & Deep Sense Scientific Director, *Dalhousie University* eem@cs.dal.ca
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