Academic Position Job Interview
DCC - University of Chile

Felipe Bravo Márquez

2 October, 2018

About me

- I'm a research fellow in the Machine Learning Group at the University of Waikato.
- I conducted my PhD in the same lab under the supervision of Bernhard Pfahringer and Eibe Frank.
- This is a very prestigious research group in Machine Learning where two internationally successful open source machine learning software suites WEKA and MOA were developed.
- My research interests and expertise lie in the acquisition of knowledge and information from unstructured data, particularly natural language text, spanning the following overlapping fields:
  1. Natural language processing
  2. Machine learning
  3. Artificial Intelligence
- My main research goals are to study society by computationally analyzing language traces left by humans in the digital space.

Qualifications

2014-2017	PhD in Computer Science, The University of Waikato, New Zealand.
2011-2013	M.Sc. in Computer Science, University of Chile (summa cum laude).
2010	Professional Degree in Industrial Engineering, University of Chile (summa cum laude).
2010	Professional Degree in Computer Science Engineering, University of Chile (summa cum laude).
2005-2009	Bachelor of Science in Industrial Engineering, University of Chile.
2003-2008	Bachelor in Computer Science, University of Chile.

Work Experience

2017- Research Fellow, *Machine Learning Group, University of Waikato*.

2011-2013 Research Engineer, *Yahoo! Labs Latin America*.
`http://labs.yahoo.com/Yahoo_Labs_Santiago`

2009- 2011 Researcher and Software Developer, *Web Intelligence Consortium Chile Research Centre*.
`http://wi.dii.uchile.cl`

2009 Internship, *Simple*, Software Developer.
`http://www.simple.cl`.

2009 Internship, *Previred*, Business Process Management Area.
`http://www.previred.com`.

2005-2006 Internship, *Vitanet*, Software Developer.
`http://www.vitanet.cl`.

Scholarships, Grants, etc

2018 Nominated by the University of Waikato for the Doctoral Dissertation Award at iConference 2019.

2018 Passed to second round on a Marsden Grant funded by the Royal Society of New Zealand.

2017 University of Waikato Doctoral Publications Scholarship.

2016 IEEE student travel grant to attend the 2016 IEEE/WIC/ACM International Conference on Web Intelligence in Omaha, Nebraska, USA.

2014-2017 University of Waikato Doctoral Scholarship.

2011-2012 National Scientific and Technological Research Commission (CONICYT) Scholarship for master's degree studies at Chilean Universities.

Selected Publications

1. F. Bravo-Marquez, E. Frank, and B. Pfahringer *Building a Twitter Opinion Lexicon from Automatically-annotated Tweets*, In *Knowledge-Based Systems* Volume 108, September 2016, Pages 65–78.
2. F. Bravo-Marquez, M. Mendoza and B. Poblete *Meta-Level Sentiment Models for Big Social Data Analysis*, In *Knowledge-Based Systems* Volume 69, October 2014, Pages 86–99.
3. S. M. Mohammad, F. Bravo-Marquez, M. Salameh, and S. Kiritchenko *Semeval-2018 Task 1: Affect in tweets*. In *Proceedings of International Workshop on Semantic Evaluation (SemEval-2018)*, New Orleans, LA, USA, June 2018.
4. F. Bravo-Marquez, E. Frank, and B. Pfahringer *Positive, Negative, or Neutral: Learning an Expanded Opinion Lexicon from Emoticon-annotated Tweets*, In *IJCAI '15: Proceedings of the 24th International Joint Conference on Artificial Intelligence*. Buenos Aires, Argentina 2015.
5. F. Bravo-Marquez, E. Frank, and B. Pfahringer *Annotate-Sample-Average (ASA): A New Distant Supervision Approach for Twitter Sentiment Analysis*, In *The biennial European Conference on Artificial Intelligence (ECAI'16)*. The Hague, Netherlands.
6. F. Bravo-Marquez, E. Frank, and B. Pfahringer *From Unlabelled Tweets to Twitter-specific Opinion Words*, In *SIGIR '15: Proceedings of the 38th International ACM SIGIR Conference on Research & Development in Information Retrieval*. Santiago, Chile 2015.

Citations

Felipe Bravo-Marquez

FOLLOW

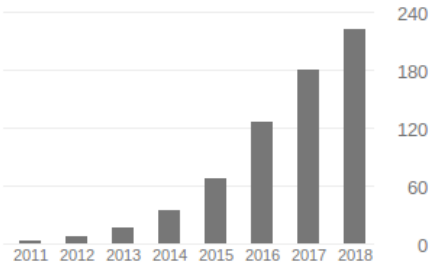
Research Fellow, University of Waikato
Verified email at waikato.ac.nz - Homepage

Natural Language Processing Machine Learning Sentiment Analysis Information Retrieval Data Mining

TITLE	CITED BY	YEAR
Meta-level sentiment models for big social data analysis F Bravo-Marquez, M Mendoza, B Poblete Knowledge-Based Systems 69, 86-99	114	2014
Combining strengths, emotions and polarities for boosting Twitter sentiment analysis F Bravo-Marquez, M Mendoza, B Poblete Proceedings of the Second International Workshop on Issues of Sentiment ...	92	2013
A novel deterministic approach for aspect-based opinion mining in tourism products	91	2014

Cited by

	All	Since 2013
Citations	667	653
h-index	13	13
i10-index	16	15



Teaching

Spring 2018	(Lecturer) Practical Data Mining (COMP321), The University of Waikato
June 2018	(Lecturer) Deep Learning for Natural Language Processing, IfI Summer School 2018 on Machine Learning, Deparment of Informatics, University of Zurich.
Spring 2013	(Lecturer) Databases Management Diploma, Informatics Engineering Department (postgraduate), Universidad Técnica Federico Santa María.
Spring 2012	(Lecturer) Data Mining (CC5206/CC71Q), Computer Science Department (undergraduate and postgraduate), University of Chile.
Fall 2011	(Lecturer) Information Technologies and Business Process Redesign (IN72K), Master in Operations Management, University of Chile.

Student Supervision

1. (2018) Nicole Chan, Co-supervised with Andreea Calude, “Social Media Meets Te Reo Māori Loanwords” Honours Project, University of Waikato.
2. (2018) Joshua Lovelock, Co-supervised with Eibe Frank,“Automatic Detection of Hate Speech”, Honours Project, University of Waikato.
3. (2018) Tristan Anderson, Co-supervised with Bernhard Pfahringer, “Building Time-Evolving Opinion Lexicon”, Honours Project, University of Waikato.
4. (2013) Edison Marrese Taylor, Co-supervisor with Juan Velásquez, “Diseño e Implementación de una Aplicación de Web Opinion Mining para Identificar Preferencias de Usuarios sobre Productos Turísticos de la X Región de los Lagos”, Industrial Engineering, U. of Chile.
5. (2012) Luis Maldonado, Co-supervisor with Mauricio Marín, “Análisis de Sentimiento en el Sistema de Red Social Twitter”, Execution Informatic Engineering, U. of Santiago.

Professional Community Involvement

1. Co-organizer of the SemEval-2018 Task 1: Affect in Tweets (about 200 participants).
2. Co-organizer of the WASSA-2017 shared task on emotion intensity (EmoInt).
3. Program committees: WASSA 2018, WISDOM 2018, SEM-EVAL 2018, IJCAI-ECAI 2018, EMNLP 2017, WASSA 2017.
4. Journal Reviewer: Journal of Machine Learning Research, Natural Language Engineering, IEEE Transactions on Knowledge and Data Engineering, Knowledge-based Systems, ACM Transactions on Intelligent Systems and Technology (TIST), IEEE Computational Intelligence Magazine.

Academic Visits

1. July 2018 - Institute of Computational Linguistics, University of Zurich, hosted by Martin Volk.
2. September 2017 - Institute of Computational Linguistics, University of Zurich, hosted by Manfred Klenner.
3. October 2016 - National Research Council Canada (NRC), hosted by Saif Mohammad.

Invited Talks

March 2018	Natural Language Processing in NZ Meetup. Tutorial: Using Sentiment Analysis as a Case Study for Introducing Modern NLP Concepts.
February 2018	University of Waikato. Tutorial: Using Sentiment Analysis as a Case Study for Introducing Modern NLP Concepts.
January 2018	Universidad de Chile. Tutorial: Using Sentiment Analysis as a Case Study for Introducing Modern NLP Concepts.
January 2018	Pontifica Universidad Catolica de Chile. Invited talk at CIWS Workshop - Future of Data: Emotion Intensties of Tweets.
September 2017	Institute of Computational Linguistics, University of Zurich: Acquiring and Exploiting Lexical Knowledge for Twitter Sentiment Analysis.
October 2016	National Research Council Canada (NRC): Acquiring and Exploiting Lexical Knowledge for Twitter Sentiment Analysis.
September 2016	University of Melbourne, hosted by Timothy Baldwin: Acquiring and Exploiting Lexical Knowledge for Twitter Sentiment Analysis.
July 2016	Pontifica Universidad Catolica de Chile: Acquiring and Exploiting Lexical Knowledge for Twitter Sentiment Analysis.
July 2016	Universidad de Chile: Acquiring and Exploiting Lexical Knowledge for Twitter Sentiment Analysis.
June 2016	Universidad Técnica Federico Santa María: Acquiring and Exploiting Lexical Knowledge for Twitter Sentiment Analysis.

Problem: Affect Classification

1. Automatically map natural language text (e.g., a tweet, a word) into affective states (e.g., anger, fear, positive, negative).

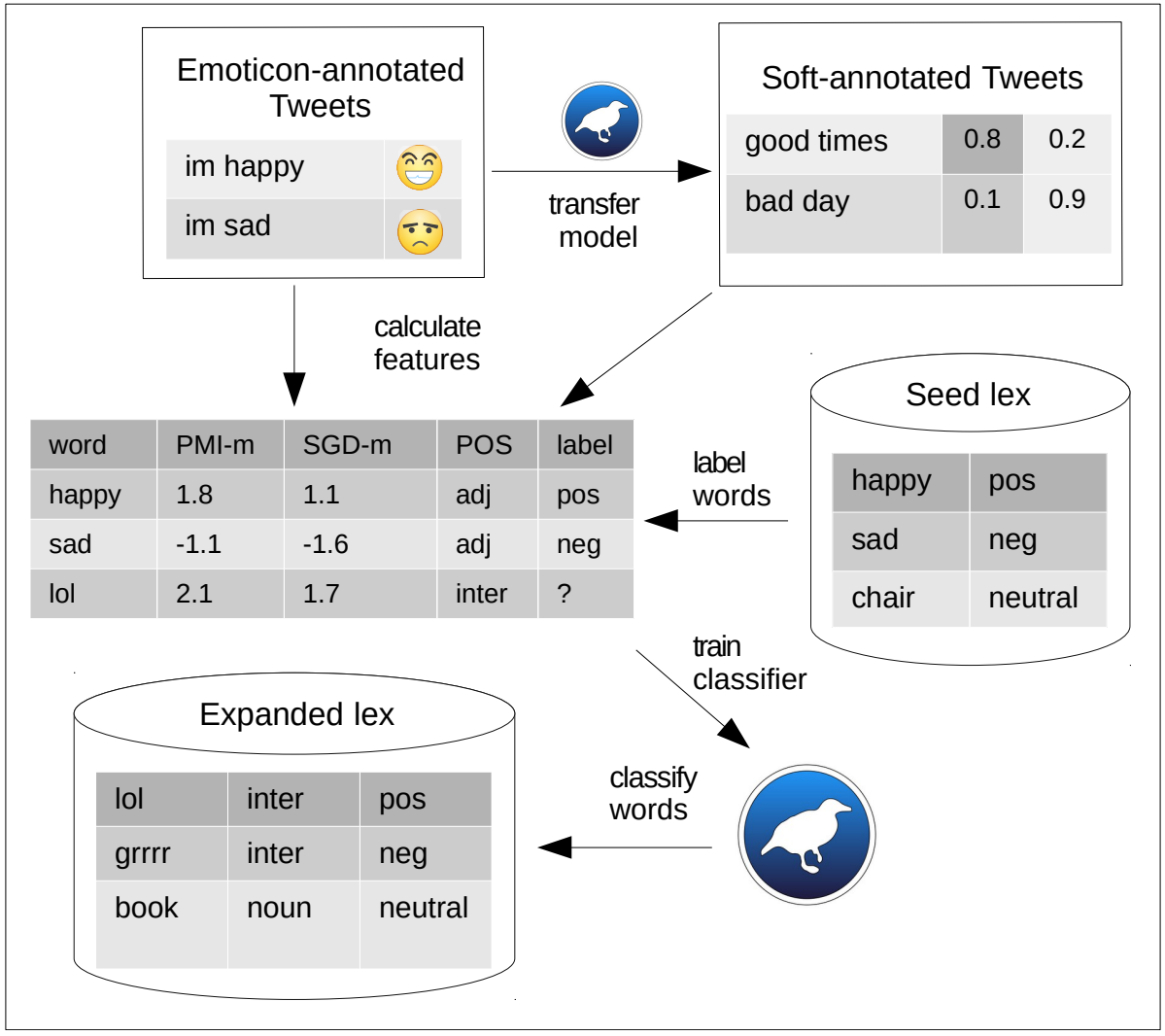
2. State-of-the-art solutions use **supervised** machine learning models trained from **manually** annotated examples.
3. **Label sparsity problem (LS)**: manual annotation is **labor-intensive** and **time-consuming**.

PhD Dissertation

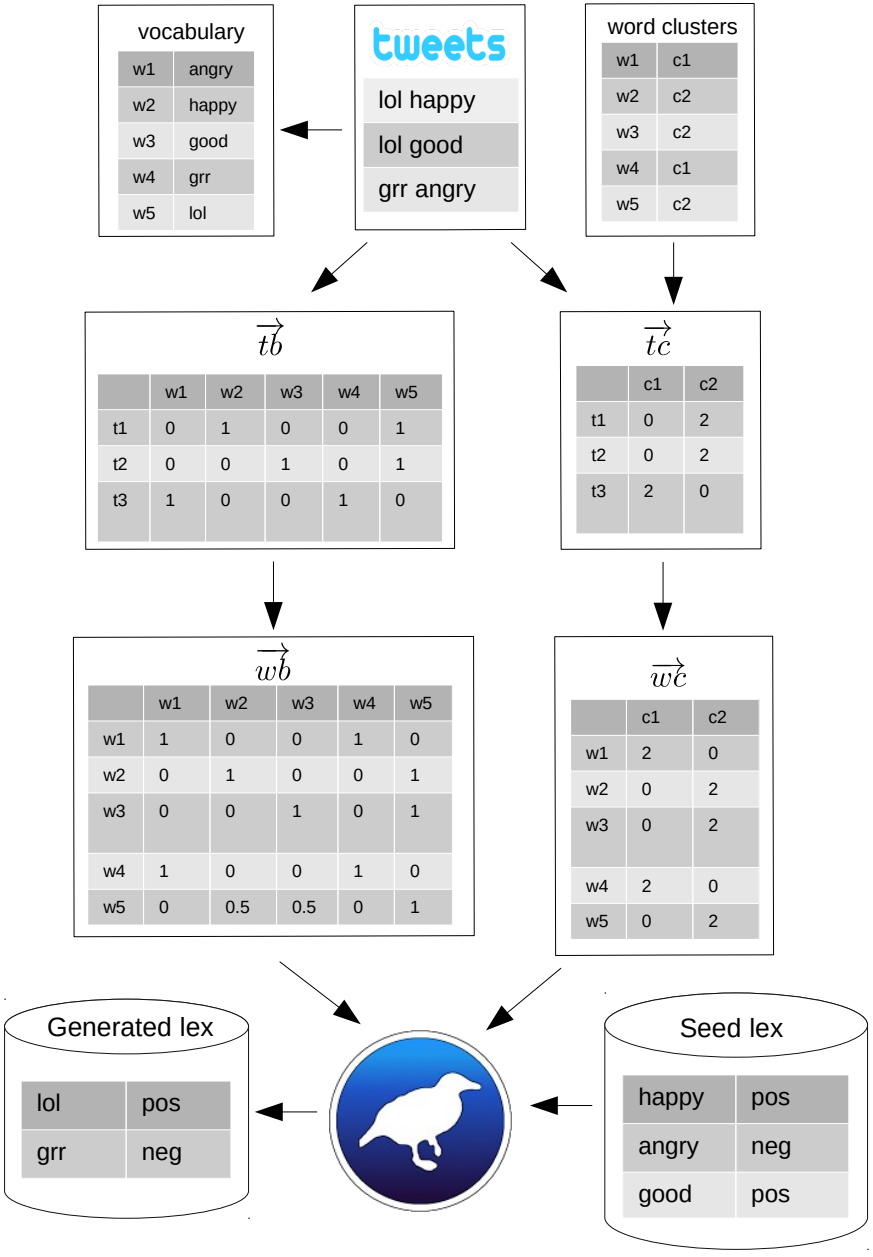
My thesis addressed the label sparsity problem for Twitter sentiment classification by automatically building **two type of resources**.

1. **Twitter-specific opinion lexicons**: we develop machine learning models to induce polarity lexicons from tweets.
2. **Synthetically labeled tweets**: we develop distant supervision methods based on **lexical knowledge** (we go beyond emoticons).

Word-sentiment Associations for Polarity Lexicon Induction

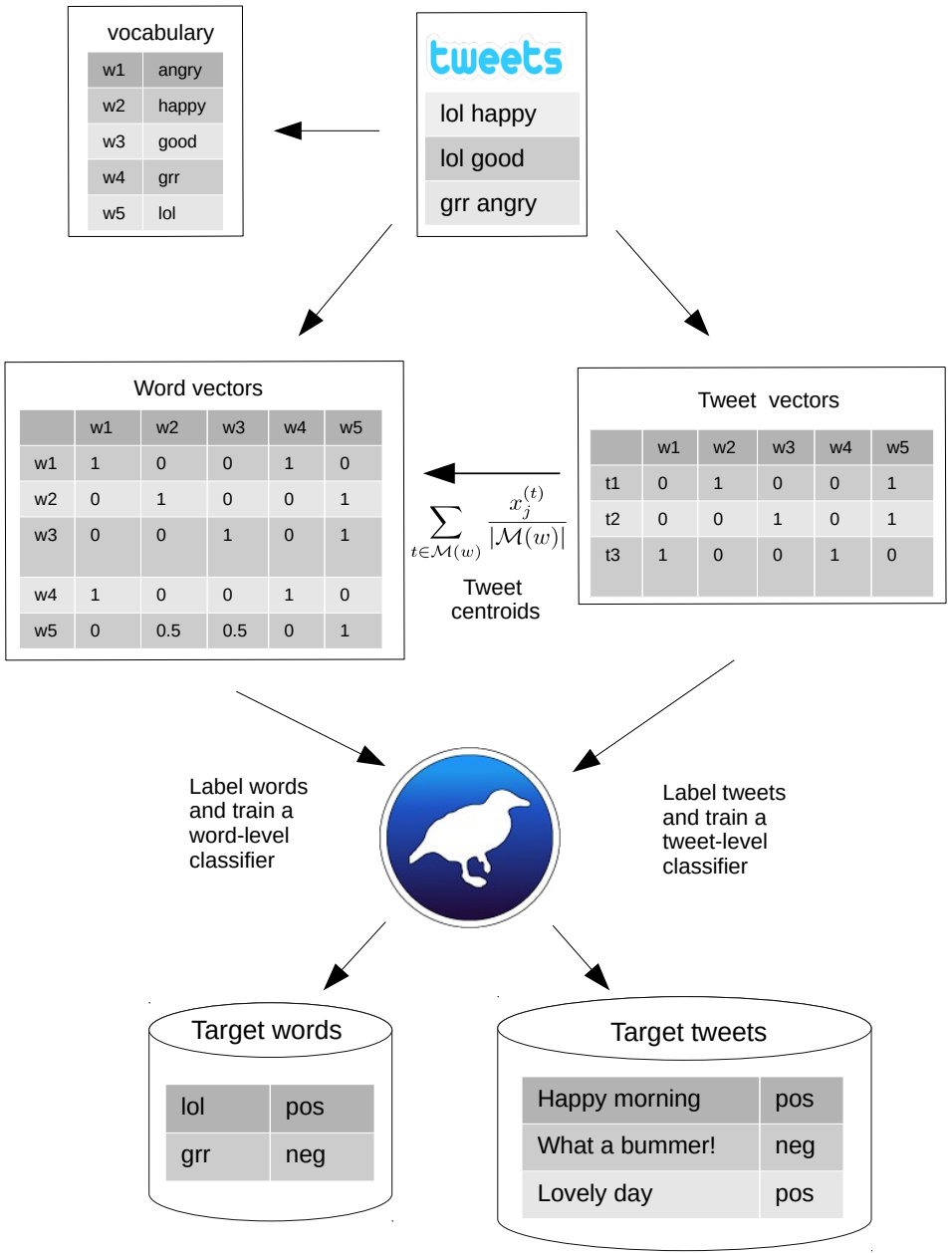


Tweet-centroid Model for Lexicon Induction



Multi-Label Classification of Emotions with TCM

Transfer Learning with Tweet Centroids



Post PhD Projects

1. AffectiveTweets: and open source project for analyzing affect from social media posts (it has been used in around 30 publications and its website receives around 10 unique visits per day).
2. Emotion Intensity Detection.
3. Hate Speech Detection with deep neural networks.
4. Time-evolving word vectors.
5. Learning compatible representations between words and tweets.
6. Māori loanwords on Twitter.

Goals at DCC

1. Participate in the education of a new generation of Chilean computer scientists and artificial intelligence (ML and NLP) experts.
2. To teach existing courses, create new courses, and supervise undergraduate and postgraduate students' research projects.
3. To position the department as a leading center of NLP research in the region (actively publish in good NLP conferences and Journals[1], attract talented students to study with us as well as bringing collaborators to visit the department).
4. I believe that NLP and machine learning can be applied to various areas developed in the Department (e.g., Data Science, Algorithms, Software Engineering).
5. Help boosting the local industry and the public sector in AI, ML, and NLP.
6. Contribute to the internationalization of the department (teach courses in English?).

[1] I am aware that ISI journals are very important in Chile.

Teaching Proposal

My main teaching goal is to create two regular courses to be taught to both undergraduate and postgraduate students

1. A course on Natural Language Processing (NLP)
2. A course on Machine Learning (ML)

- I would also like to teach more advanced courses for postgraduate students about deep learning (neural networks that learn representations) and specific areas of NLP such as lexical semantics and sentiment analysis.
- Other topics I would be happy to teach: artificial intelligence, programming, programming methods, databases, algorithms and data structures, statistics, data mining, and information retrieval.

Research Proposal

- Develop the intersection of stream machine learning and natural language processing.
- Learn time-evolving representations for text using both distributional approaches and neural networks.
- Detect semantic change using change detectors (e.g., ADWIN).
- Learn universal representations for different types of objects (e.g., tweets, words, user) to transfer knowledge between domains.
- Create linguistic resources for low-resource indigenous languages (e.g., Māori, Mapudungun, Quechua)
- Apply for a FONDECYT initiation grant.

Questions?

Thanks for your Attention!