Juan Raúl Vázquez Carrillo

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Education

03.2018– PRESENT **Ph. D. Language Technology**, *University of Helsinki (Finland)*.
Research done under the ERC project FoTran and the EU-H2020 project MeMAD.
Supervisor: Prof. Jörg Tiedemann & co-Supervisor: Mathias Creutz
Focus Areas: Natural Language Processing, Neural Machine Translation, Math. Modelling

09.2015– 09.2017 **M. Sc. Mathematical Engineering**, *Università degli Studi dell'Aquila (Italy)*.
Scholarship award from the European Commission.
Thesis: The Vehicle Routing Problem - An Application and Proposed Heuristics.
Adviser: Prof. Claudio Arbib & co-Adviser: Prof. Stefano Smriglio
Focus Areas: Mathematical Modelling, ODEs, PDEs, Optimization   GPA: 110/110

04.2016– 09.2016 **M. Sc. Technomathematik**, *Hamburg Universität (Germany)*.
Joint degree awarded as participant of the Erasmus Mundus Joint MSc. in Mathematical
Modelling in Engineering - MathMods (http://www.mathmods.eu/)
Focus Areas: non-smooth Convex Optimization and Numerical Approximation methods for
PDEs (Galerkin Methods, Finite Differences and Finite Volumes)   GPA: 2.03/5

08.2008– 06.2014 **B.Sc. Applied Mathematics**, *Instituto Tec. Autónomo de México (Mexico)*.
Thesis: A Bayesian Approach to Time Series Smoothing via the Hodrick-Prescott Filter.
Adviser: Prof. Enrique de Alba Guerra
Focus areas: Statistics, Probability, Linear and non-Linear Optimization   GPA: 8,4/10

09.2011– 07.2012 **Exchange Program from the German Academic Exchange Service (DAAD)**,
Universität des Saarlandes (Germany).
Scholarship award from the DAAD. Statistics, economics and intensive German language
courses. Professional Internship in Volkswagen Hannover.

Publications

2020 **A Systematic Study of Inner-Attention-Based Sentence Representations in Multilingual Neural Machine Translation**.
Raul Vazquez, Alessandro Raganato, Jörg Tiedemann and Mathias Creutz. In Computational Linguistics. Volume 46, Issue 2 (Accepted for Publication).

2019 **Multilingual NMT with a language-independent attention bridge**.
R Vazquez, A Raganato, J Tiedemann and M Creutz. In Proceedings of the 4th Workshop on Representation Learning for NLP (RepL4NLP).

2019 **An Evaluation of Language-Agnostic Inner-Attention-Based Representations in Machine Translation**.
A Raganato, R Vazquez, M Creutz and J Tiedemann. In Proceedings of the 4th Workshop on Representation Learning for NLP (RepL4NLP).

2019 **The University of Helsinki Submission to the WMT2019 Parallel Corpus Filtering Task**.
R Vazquez, U Sulubacak and J Tiedemann. In Proceedings of the Fourth Conference on Machine Translation: Shared Task Papers.

2019 **The University of Helsinki Submissions to the WMT2019 Similar Languages Translation Task**.
Y Scherrer, R Vazquez, and S Virpioja. In Proceedings of the Fourth Conference on Machine Translation: Shared Task Papers.

2019 **The University of Helsinki Submission to the WMT2019 News Translation Task**.
A Talman, U Sulubacak, R Vazquez, Y Scherrer, S Virpioja, A Raganato, A Hurskainen, and J Tiedemann. In Proceedings of the Fourth Conference on Machine Translation: Shared Task Papers

2018 **The MeMAD Submission to the WMT18 Multimodal Translation Task**.
SA Grönroos, B Huet, M Kurimo, J Laaksonen, B Merialdo, P Pham, M Sjöberg, U Sulubacak, J Tiedemann, R Troncy and R Vázquez. In 3rd Conference on Machine Translation (WMT 2018)

Experience

Working Experience

03.2018– **Researcher** - **Doctoral Candidate**, *University of Helsinki*, Helsiki (Finland).
PRESENT Development of models for natural language understanding (NLU) with a data-driven approach that incorporates massively multilingual parallel corpora and the use of diverse input signals. The research is centered on the development and implementation of multilingual and multimodal machine translation models.

10.2017– **Data Science Lab**, *SEDESOL - Secretariat of Social Development*, Remote Work.
01.2018 Directly involved in the development of a monitor of agricultural production via remote-sensing data as part of a hunger early-warning system for the Mexican government. I am in charge of the design and implementation of machine learning models, including Random Forests, Extra Trees and Sequential Neural Networks in order to identify areas where high hydrometeorological stress might have a deep impact on agro-production.

02.2017– **Collaboration**, *LFondry and Univerità degli Studi di L'Aquila*, L'Aquila (Italy).
09.2017 Development of an optimization model for improving LFoundry's production line. Customization of the Vehicle Routing Problem through Gurobi and GLPK software to improve microchips pickup and delivery time. Some characteristics that made the considered problem particularly difficult are the limited capacity of both vehicles and delivery points, as well as time-window constraints for pickups and deliveries.

01.2014– **Project Coordinator and Research Assistant**, *INEGI - National Institute of*
08.2015 *Statistics and Geography*, Mexico City (Mexico).
Throughout the almost two years at INEGI, I assisted the Institute's vice-president of Economical Information, Enrique de Alba Guerra. Duties involved statistical analysis of time series and results visualization, as well as reading, documentation, application and reporting of research articles; topics mostly included time series analysis and decomposition, Bayesian Statistics and experiment design and modelling.

05.2016– **Modelling Camp**, *Hamburg Universität*, Hamburg (Germany).
06.2016 Development of a mathematical framework for describing pedestrian motion and crowd dynamics. Implementation and simulation with MatLab.

06.2012– **Vehicle Inspection Intern**, *Volkswagen*, Hannover (Germany).
08.2012 I created a graphical interface to improve the production line operation, mostly in Java. I also prepared automated infrared signal sender and receiver for facilitating the interface usage and the extraction of information from their database.

09.2007– **Intern**, *ICYE and Fürst Donnersmark-Stiftung*, Berlin (Germany).
09.2008 In a Rehabilitation Center I helped a group of 7 people with physical and cognitive limitations in everyday situations.

Extracurricular

02.2017– **Program Representative**, *Erasmus Mundus Association*, L'Aquila(Italy).
02.2018 Current duties involve the opening of communication channels between the students, the Erasmus Mundus Association and the MathMods MSc program authorities. During June 2017 we held a Summer School in Lviv, Ukraine with the partner institutions of MathMods. I also manage funding requests for students' academic activities

09.2012– **Logistics Coordinator Volunteer**, *TECHO*, Mexico City (Mexico).
12.2013 TECHO is a social development program that fights extreme poverty in Latin America (http://www.techo.org). I collaborated with the planning and implementation of a project for the detection of irregular settlements, and the establishment of a first contact between said settlements and the NGO. I also co-coordinated a major project that resulted in a statistical classifier for the identification of the families that most urgently needed the NGO's attention.

01.2011– **Students Representative Council President**, *ITAM*, Mexico City (Mexico).
09.2011 Organized activities of interest on various lines of personal development, such as professional, social and academic, for students of the Bachelor in actuarial science.

06.2009– **Volunteer**, *TECHO*, Mexico City (Mexico).
05.2011 I volunteered in the Resources Department to obtain a monthly income from partnerships. Every two or three months I also volunteered in the construction of emergency housing for families living in irregular settlements.

Computer skills

Programs Proficient Knowledge: Python, R, Matlab, SPSS, TeX, Office

Good Command: SQL, Java, SAS, EViews

Basic knowledge: Weka, Minitab, Perl.

Platforms Linux, Windows

Languages

Mother tongue **Spanish**

Advanced **English** *C2: Toefl iBT, 2014 (107/120)*

Italian *C1: DALI-C1, 2017 (80.9%)*

German *C1: DSH-2, 2012 (86% oral, 67% written)*

Basic **Finnish** *B1: self assessment*

Certificates

2011 Probability Exam (P/1) from the Society of Actuaries (SoA)

approved with a grade of 8 out of 10