



# Guillermo Ortiz Jiménez

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## Personal Profile

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PhD researcher working at EPFL under the supervision of Prof. Pascal Frossard, developing an understanding of deep learning through the lens of adversarial perturbations and working to define a more interpretable AI.

## Education

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| (Nov 2022) -<br>Nov 2018 | <b>PhD. in Electrical Engineering</b><br><i>École Polytechnique Fédérale de Lausanne (EPFL), Switzerland</i> <ul style="list-style-type: none"><li>• <b>Thesis topic:</b> Dynamical study of adversarial perturbations in deep neural networks</li><li>• <b>Thesis director:</b> Prof. Pascal Frossard</li></ul>   |
| Aug 2018 -<br>Sep 2016   | <b>M.Sc. Electrical Engineering</b> (Best Graduate, GPA: 9.59/10)<br><i>Delft University of Technology, The Netherlands</i> <ul style="list-style-type: none"><li>• <b>Master Thesis:</b> Multidomain graph signal processing: Learning and sampling</li><li>• <b>Thesis supervisor:</b> Prof. Geert Leus</li></ul>  |
| Jun 2015 -<br>Sep 2011   | <b>B.Sc. in Telecommunication Engineering</b> (Best Graduate, GPA: 9.45/10)<br><i>Universidad Politécnica de Madrid, Spain</i> <ul style="list-style-type: none"><li>• <b>Erasmus Exchange</b> (2014-2015) at <i>Vienna University of Technology, Austria</i></li><li>• <b>Bachelor Thesis:</b> Overcomplete dictionary learning for sparse representation of images</li></ul> |
| Ongoing -<br>Sep 2017    | <b>B.Sc. in Physics</b><br><i>Universidad Nacional de Educación a Distancia, Spain</i><br>Distance learning (3rd year)   |

## Work and Research Experience

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| (Nov 2022) -<br>Nov 2018 | <b>Doctoral Assistant</b><br><i>Signal Processing Laboratory. École Polytechnique Fédérale de Lausanne, Switzerland</i> <ul style="list-style-type: none"><li>• Studying the dynamical properties of the geometry of deep neural networks.</li><li>• Studying adversarial perturbations and the vulnerability of deep networks to them.</li><li>• Designing methods to create more interpretable and human-aligned deep learning models.</li><li>• Teaching assistant of <i>Computational optimal transport</i> and <i>A network tour of data science</i>.</li></ul> |
| Oct 2017 -<br>Jul 2017   | <b>Research Intern</b><br><i>Philips Research Hamburg, Germany</i> <ul style="list-style-type: none"><li>• Involved in different projects related to computational medical imaging and fetal ultrasound</li><li>• Research on self-supervised deep learning for medical image reconstruction.</li></ul>  |
| Jul 2016 -<br>Sep 2015   | <b>Research Assistant</b><br><i>Microwaves and Radar Group. Universidad Politécnica de Madrid, Spain</i> <ul style="list-style-type: none"><li>• Research at the intersection of computer graphics, vision, and radar technology.</li></ul>  |

## Languages

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**Spanish:** Native      **English:** Full Proficiency (C2)      **German:** Upper intermediate (B2)  
**French:** Intermediate (B1)      **Dutch:** Beginner (A1)

## Scholarships and Awards

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|------------------------|--|
| Dec 2018               | <b>National Award for Excellence in Academic Performance (2nd Prize)</b><br><i>Ministry of Education of Spain</i> <ul style="list-style-type: none"><li>• Most prestigious award granted by the Government of Spain to students in all academic fields that showed an outstanding accomplishment during their undergraduate studies.</li></ul> |
| Aug 2018 -<br>Sep 2016 | <b>“La Caixa” Postgraduate Fellowship</b><br><i>La Caixa Bank Foundation</i> <ul style="list-style-type: none"><li>• One of the most prestigious postgraduate fellowships in Spain.</li><li>• It provided complete funding of my master studies.</li></ul>   |
| Nov 2018<br>Oct 2015   | <b>Best Graduate (Valedictorian)</b><br><i>Delft University of Technology and Universidad Politécnica de Madrid</i> <ul style="list-style-type: none"><li>• Ranked first in my master and bachelor.</li></ul>  |
| 2019-<br>2011          | <b>Other grants and scholarships</b> <ul style="list-style-type: none"><li>• Several competitive grants and scholarships during the course of my studies.</li></ul>  |

## Publications

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- **G. Ortiz-Jiménez** et al. "Forward-Backward Splitting for Optimal Transport Problems," *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Barcelona, May. 2020. (submitted)
- C. Vignac, **G. Ortiz-Jiménez** et al. "On the Design of Graph Neural Network Architectures," *International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Barcelona, May. 2020. (submitted)
- **G. Ortiz-Jiménez** et al. "CDOT: Continuous Domain Adaptation using Optimal Transport," *OTML Workshop (NeurIPS 2019)*, Vancouver, Dec. 2019.
- **G. Ortiz-Jiménez** et al. "Sparse Sampling for Inverse Problems With Tensors," in *IEEE Transactions on Signal Processing*, vol. 67, no. 12, pp. 3272-3286, Jun. 2019.
- **G. Ortiz-Jiménez** et al. "Sampling and Reconstruction of Signals on Product Graphs", in *Proc. GlobalSIP 2018*, Anaheim, CA, USA, Nov. 2018,
- **G. Ortiz-Jiménez** et al. "Simulation Framework for a 3-D High-Resolution Imaging Radar at 300 GHz with a Scattering Model Based on Rendering Techniques", *IEEE Transactions on Terahertz Science and Technology*, vol.7, no.4, pp.404-414, July 2017.

## Advising experience

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- Julien Heitmann (Semester project, Fall 2019): *Weight subspace dynamics of deep neural networks*.
- Manuel Faysee (Semester project, Fall 2019): *Time-varying graph neural networks for traffic forecasting*.

## Computer Skills

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**Programming languages:** Python, Matlab, C and Java.  
**Deep learning frameworks:** PyTorch, Tensorflow, CNTK.  
**Other tools:** Git, Linux, Illustrator.