Pau Batlle Franch
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Education

2020-	**PhD in Computing and Mathematical Sciences**	California Institute of Technology, Pasadena

First year graduate student at Caltech under a department Graduate Fellowship

2015-2020	**Bachelor in Mathematics**	Polytechnic University of Catalonia, Barcelona

Main courses in Pure and Applied Mathematics, Computational Methods and Optimization, Probability, Statistics and Machine Learning. Coursed under a scholarship by the CFIS Program

2015-2020	**Bachelor in Engineering Physics**	Polytechnic University of Catalonia, Barcelona

Main courses in Theoretical and Statistical Physics, Data Analysis and Engineering Applications. Coursed under a scholarship by the CFIS Program

2013-2015	**International Baccalaureate Diploma Programme (IB)**	Institut V.Vives, Girona

High level in Mathematics and Physics. Coursed simultaneously with the Spanish Baccalaureate under a scholarship by the Cellex Foundation

Work experience

01/19 - 05/19	**Data scientist - ARCVI**	Barcelona

Part-time job at an analytics consulting start-up based in Barcelona. Projects in machine learning and combinatorial optimization applied to price prediction and routing

Research internships at institutions

09/19 - 05/20	**Visiting student - NYU Center for Data Science**	New York, USA

Currently doing my Bachelor's thesis at NYU under the supervision of Prof. Carlos Fernández-Granda and Prof. Joan Bruna. My research involves analyzing dynamic networks with Graph Neural Networks for dynamic link prediction

07/19 - 08/19	**Junior Researcher - Industrial Robotics Institute (IRI)**	Barcelona

Summer internship at the lab of Dr. Mariella Domiccoli. Research in visually grounded representations of words with the use of Graph Neural Networks with a scholarship by the Spanish government

03/19 - 07/19	**Student Intern - Material Characterization Group (GCM), UPC**	Barcelona

Internship during the academic year at the Material Characterization Group at UPC, working with Prof. Luis Carlos Pardo. Research in data analysis of Succinonitrile Quasi Elastic Neutron Scattering (QENS) experiments using Bayesian Machine Learning techniques, in order to understand the structure of the molecule and its processes at different temperatures

06/18 - 01/19	**Machine Learning Research Intern - BBVA Data & Analytics**	Barcelona

Summer internship continued during the semester part-time under the supervision of Dr. José-Antonio Rodríguez Serrano. Research in developing Deep Learning architectures for tag prediction and text classification using attention models

06/17 - 09/17	**Machine Learning Research Intern - BBVA Data & Analytics**	Barcelona

Summer internship under the supervision of Dr. José-Antonio Rodríguez Serrano. Research in Natural Language Processing, comparing word embedding techniques in text under text amount constraints

Publications

- **Batlle, P.**, Bruna, J., Fernandez-Granda, C., Preciado, V. (2020). Adaptive Test Allocation for Outbreak Detection and Tracking in Social Contact Networks. *https://arxiv.org/abs/2011.01998*

- **Batlle, P.**, Teixidó, A., Llobera-Querol, J., Medrano, I., Pardo, L. C. (2019). Exploring the rubber sheet spacetime analogy by studying ball movement in a bent trampoline. *European Journal of Physics*

- **Batlle, P.**, Garcia, R., Eritja, A., Dini, P. (2019). Mobility inference and user clustering using LTE PDCCH data (Preprint) *Available online at shorturl.at/cmnox*

Other research projects and summer schools

02/19 - 06/19 **Scavenge Data Science International Competition** Split, Croatia
Participation in a four-month long data science competition in a team with two other undergraduate students from UPC. We were awarded the first overall prize and we presented our work in the IEEE Softcom Conference. Currently writing a paper to a peer-reviewed journal extending our methodologies and obtained results under the supervision of Dr. Paolo Dini

01/18 - 04/18 **ISBI 2018 - Lung Nodule Malignancy Prediction Challenge** Washington D.C, USA
Participation in a lung cancer biomedical image challenge as part of the UPC Team, which obtained 5th overall place out of 100+ teams using Deep Learning architectures. A representative of our group was invited to present the approach at the ISBI 2018 Conference in Washington D.C

07/16 - 08/16 **Numerical orbit determination - International Astronomy Youth Camp** Nettlecombe, UK
Implemented an algorithm to determine the orbital parameters of asteroids and planets using time and sky position data of such objects

06/16 - 06/16 **Introduction to Partial Differential Equations Summer School** Lisbon, Portugal
Participant in the Introduction to PDEs Summer School under a scholarship by the Gulbenkian Foundation

07/15 - 08/15 **Computational electrostatics - Petnica Summer Science School** Petnica Science Institute, Serbia
Computational Simulation in Electrostatics and introduction to Maxwell's Equations. Implemented a simulation to predict the scattering angle of charged particles in scattering experiments

07/14 - 08/14 **Nanoparticle synthesis - International Summer Science Institute** Weizmann Institute of Science, Israel
Wet lab and data analysis work under the supervision of Dr. Mariano Susman as a participant in the International Summer Science Institute of the Weizmann Institute. I presented this work in the Young Photonics Congress at the Institute of Photonic Sciences (ICFO) in Barcelona in September 2015

Honors

Scholarships

2019 **Spanish Summer Young Research Scholarship** Barcelona, Spain
Scholarship awarded by the Spanish Government to do a research internship over the Summer at the Industrial Robotics Institute (IRI) in Barcelona

2019 **CFIS Mobility Scholarship** Barcelona, Spain
Scholarship to do a research internship abroad as part of the Bachelor Thesis of the CFIS program

2016 **Gulbenkian Foundation Summer School Scholarship** Lisbon, Portugal
Travel and registration scholarship to attend the Introduction to PDEs math undergraduate summer school

2015 **CFIS Tuition and accomodation Scholarship** Barcelona, Spain
Partial tuition and accommodation scholarship to study two Bachelor programs at the Polytechnic University of Catalonia in Barcelona over the course of five years

2013 **CiMs-Cellex Scholarship** Girona, Spain
Full tuition and accommodation scholarship to study the International Baccalaureate program and the Spanish Baccalaureate simultaneously and to perform an International Research Internship at the Weizmann Institute of Science once I got accepted as a participant

Awards

2019 **Scavenge Data Challenge 1st Overall Prize** Barcelona, Spain
2019 **jIAPS Physics Article Contest Runner Up** Cologne, Germany
2018 **ISBI 2018 Medical Image Challenge 5th place** Washington D.C, USA
2018 **Junction hackathon Epic Games Prize** Aalto University, Finland
2018 **StartHack SRF Prize** Sankt Gallen University, Switzerland
2016 **Lauzhack SBB Prize** EPFL, Switzerland
2016 **Fisidabo experimental design contest 1st Prize** Barcelona, Spain
2015 **Excellence distinction on the University Entrance Exam** Barcelona, Spain