Postgraduate Application Form

UNIVERSITY OF CAMBRIDGE
Postgraduate Admissions Office

Santorum Varela, Mr Alejandro

Course	MPhil in Machine Learning and Machine Intelligence	**Date submitted**	
Department	Department of Engineering	**Mode of study**	Full Time
Course start date	01 Oct 2021 (MT 2021)		

Academic History

Sep 2016 - Jul 2021 *(Not yet obtained)*	Título de Doble Grado in Computer Science & Mathematics (Engineering & Science)	8.8	Universidad Autonoma de Madrid (*Spain*)

Immigration

Nationality	Spain (1st)
Country of birth	Spain
Currently ordinarily resident	Spain
Visa	Required

Language

Type	CAE (Taken on 30 Jun 2018)
Reference No	A6598280
Score	C
Document	CAE_certificate_AlejandroSantorum.pdf

Scholarships

Apply for funding	Yes
Apply for Cambridge Trust	Yes
Apply for Gates Cambridge	No

* Document not uploaded at the point of submission
** Other university

Curriculum Vitae

CV_AlejandroSantorum.pdf

Career Goals

1000/1000 chars

Since I started studying mathematics and computer science, I was determined to use the earned expertise from both fields to tackle real-world problems, which is why I love Artificial Intelligence. Studying the MPhil in MLMI has become one of my greatest goals, due to its global recognition and its potential to boost both my technical and communication skills with the desire of becoming a machine learning expert. In addiction, once I finish my Master's studies, I intend to get a job at a reputable company in the biomedical sector because I am willing to apply my machine learning knowledge to improve the quality of life of other people through biotechnology and, at the same time, learn from my own teammates and work. Finally, I am looking forward to starting my own business in the field of biomedicine with all the experience gained throughout all this time, with the aim of building modern prosthesis powered by AI and nerve signals, uniting technological advances and contemporary medicine

Additional Information to Support Application

672/1000 chars

In the undergraduate program at Autonomous University of Madrid, I was able to develop several skills that make me a strong candidate for your program such as advanced knowledge in calculus, linear algebra and statistics, as well as in probability, algorithm analysis and artificial intelligence. Moreover, it has also allowed me to instruct myself in the fundamentals of machine learning, neurocomputation and organizing a research project due to my two final degree dissertations in random matrix theory and machine learning. Finally, I have participated in various international machine learning hackathons, working together with a heterogeneous group of professionals.

Course Specific Questions

MLMI - MPhil track	Speech and Language Technology; Computer Vision and Robotics
Core - Motivation for applying.	As an undergraduate of joint bachelor's degree in Computer Science and Mathematics, this graduate program is magnificent toward achieving my goal of becoming an Artificial Intelligence expert. Taking into account my career goals, I have mainly chosen the Master of Philosophy in Machine Learning and Machine Intelligence at University of Cambridge because of its worldwide recognition and its leading-edge Computational and Biological Learning group. This research lab, above all the sensorimotor control and bioinformatics subgroup, will boost my knowledge in biomedicine while carrying out my research project. Furthermore, the chance of collaborating, not only with my classmates, but also alongside PhD students and world-renowned scientists in the field of artificial intelligence and biotechnology is unique among data science masters all over the world. Additionally, the University of Cambridge is known for its strong mathematical background, so teaching in this place will not underestimate the mathematical details of the different results and topics, making a difference with other programs. Finally, one aspect that I find very attractive about the MPhil in MLMI is that it focuses on improving both research and marketable skills of its students in different fields of data science. This will definitely help me in my future job and in my entrepreneurial goals.
Core - Brief statement of relevant work experience	
MLMI - Academic preparation (math)	-Calculus I: univariate differentiation and integration -Calculus II: vector calculus, gradients , coordinate systems, multivariate differentiation and integration -Analysis: multivariate differentiation, differentiable surfaces and manifolds, manifold integration -Differential Equations: ODEs, differentiation, integration -Complex Analysis I: complex differentiation and integration -Geometry of Curves & Surfaces: manifold integration -Integration & Measure

	Theory: Lebesgue integration
MLMI - Academic preparation (algebra)	-Linear Algebra: vectors, matrices, linear transformations, matrix inversion, eigenvalues and eigenvectors, matrix factorization -Linear Algebra & Geometry: vectors, matrices, linear transformations, matrix inversion, eigenvalues and eigenvectors, matrix factorization, conics and quadratics problems, affine geometry -Numerical Analysis: matrix inversion, eigenvalues and eigenvectors, matrix factorization, SVD, PCA, least squares solutions
MLMI - Academic preparation (stat)	-Probability I and Probability II : random variables, expectation, mean and variance, independence and conditional probability, law of large numbers, correlation, central limit theorem -Statistics I and Statistics II: random variables, random vectors, expectation, mean and variance, independence and conditional probability, law of large numbers, correlation, central limit theorem -Integration & Measure Theory: expectation -Modelization: Markov chains, Stationarity
MLMI - Academic preparation (inference)	-Laboratory: Monte Carlo simulations -Artificial Intelligence: maximum likelihood and Bayesian estimation, regression; classification, clustering -Modelization: Markov models -Fundamentals of Machine Learning: maximum likelihood and Bayesian estimation, regression; classification, clustering
MLMI - Academic preparation (info theory)	-Artificial Intelligence: entropy -Cryptography and Coding Theory: mutual information, source and channel coding, Hamming codes, Golay codes, Reed-Muller codes, Shannon theorem
MLMI - Academic preparation (comp)	-Programming I & Programming II: programming languages (C/C++), algorithms, data structures -Programming Project: computing course work, project experience -Data Structures: data structures -Analysis of Algorithms: algorithms, complexity -Software Analysis & Design: programming languages (Java) -Software Analysis & Design Project: computing course work, project experience -Computer Systems I & Computer Systems II: programming languages (Python3), data structures, computing course work
MLMI - Academic preparation (project title)	-Mathematics Final Degree Dissertation: project about Random Matrix Theory, focused on Wishart distribution, Wigner's semicircle law and Tracy-Widom law. -Computer Science Final Degree Dissertation: project focused on the field of machine learning, studying stochastic processes and using RMT to estimate covariance matrices. -College Merits: Artificial Intelligence, Probability I and II, Computer Systems II, Communication Networks I and II, Microprocesors & Fundamentals of Computing
Summary of Available Marks	Year 1 overall mark: 8.69 ; Year 2 overall mark: 8.7 ; Year 3 overall mark: 8.65 ; Year 4 overall mark: 8.98 ; Mathematics degree overall mark: 8.48 ; Computer Science degree overall mark: 9.03 ; Joint degree overall mark: 8.75 (on a 10-scale system)

Application Information

Academic Awards

Excellence Scholarship	Scholarship awarded by Community of Madrid to the best university reports of course 2016-2017	31 Mar 2018	£1,885.00
Excellence Scholarship	Scholarship awarded by Community of Madrid to the best university reports of course 2017-2018	31 Mar 2019	£1,790.00
Excellence Scholarship	Scholarship awarded by Community of Madrid to the best university reports of course 2018-2019	31 Mar 2020	£1,890.00
Redradix AI Hackathon Champion	Winning Artificial Intelligence hackathon organized by Redradix at UAM	31 Mar 2019	£580.00

Employment History

No employment history entered

Other Applications Made

MSc in Artificial Intelligence	Computing department	Imperial College of London (*United Kingdom*)

Personal Information

Identifying Information

Full name	Santorum Varela, Mr Alejandro	**Date of birth**	23 Jan 1998
Previous name		**Legal gender**	Male

Contact

Email	alejandro.santorum@gmail.com	**Phone**	+34 672779997 (1st)
Skype address			
Contact address	Plaza de la marina, no. 3 - 3 A, Lalín, Pontevedra, 36500, Spain	**Home address**	Same as contact address
Valid until		**Valid until**	

Dependants

Partner	**WILL NOT** bring partner	**Child**	**WILL NOT** bring children

Disability

Disability	No disability
Further information	

Adjustment for Interview

Adjustment required	No
Details	

College Preferences

College	Trinity College (1st) Peterhouse (2nd)

Current Membership

College	Not College member

Funding Application

Cambridge Trust

Apply for Cambridge Trust Yes

Personal Statement

256/3000 chars

I do not consider myself eligible for any extra award. I just consider myself eligible for the awards that I am automatically considered when I apply for postgraduate study, in this case, Master of Philosophy in Machine Learning and Machine Intelligence

Research Councils

EPSRC, ESRC and STFC

- **Engineering and Physical Sciences Research Council (EPSRC),**
- **Economic and Social Research Council (ESRC),**
- **Science and Technology Facilities Council (STFC)**

You will automatically be considered by submitting this application form by your **funding** deadline.

MRC and NERC

- **Medical Research Council (MRC),**
- **Natural Environment Research Council (NERC)**

Refer to the appropriate website for more information.

Studentships

0/1000 chars

Gates Cambridge Scholarships (Overseas)

Apply for Gates Cambridge No

Personal Statement

0/3000 chars

Your Funding

Funding Sources

No funding sources entered

Not circulated to department

The information in this section will not be circulated to departments.

Protected

Ethnicity White
Religion/Belief No religion
Sexual Orientation Heterosexual

Secondary Education

2nd Education No
School Type
Postcode at 17
Free Meals
Care Leaver
Caring Responsibilities
Parents HE

Visa Requirement

Visa type I do not currently have a UK visa

Passport

Passport number PAL531199
Start/Expiry date 21 Sep 2020 / 21 Sep 2025

Study Visas

Visa not entered

Declaration

The information you have provided forms the legal basis of your application to the University of Cambridge. We reserve the right to refuse admission in the event of any misrepresentation by you. Submission of an application does not imply an offer of admission.

- The University of Cambridge, the Cambridge Colleges, the Gates Cambridge Trust and the Cambridge Commonwealth, European and International Trust (and their collaborators) will use your personal information for the purpose of processing your applications for admission and funding and deciding whether to offer you a place for the course you have applied for. For further information on the use of your personal information during the application process, please see 'How we use your personal information (for applicants)'.
- I certify that all the information given in this application is complete and accurate. I also understand that if I have given false or misleading information, the University of Cambridge will not admit me as a Postgraduate student and may take legal action against me.