# Graduate Admission and Scholarship Application Form (GRADSAF)



This form should be completed if you wish to apply for admission as a graduate student at the University of Cambridge.

If you are, or have previously been, a graduate student at the University of Cambridge please see <a href="https://www.admin.cam.ac.uk/offices/gradstud/prospec/apply/continuation/">www.admin.cam.ac.uk/offices/gradstud/prospec/apply/continuation/</a> for information regarding the continuation process.

			SECTION A: AI	I questic	ons must	be com	pleted			
A(1) Personal details										
Name (this should be your legal name)				Name (previous)  If you had a different study at Cambrid			ent name during a ge, please include			
` ''	Feldman Matthew			Last (family)			,-,,			
Other names	Stephe	n			Other first r	names				
Title (Mr/Mrs/Miss/Dr etc)	Mr				Title (Mr/Mrs/	Miss/Dr etc)				
Date of Birth		Nationality	and residence							
07 07 199		Country of pe	ermanent residence						Do you require to study in the U	
Gender	T	Nationality		United						_
		Any second i	•	Not App						
X Male Fe	male	Country of bi	rth	United S	States					
A(2) Contact Informa	tion									
			Mailing Address				Home (p	ermane	ent) Address (if	different)
Number/street	229B	NW 3rd Ave				1159	5 Waterb	end Ct.	•	
_										
Town or city		esville				Wellin				
County/province/state	Floric					Florid				
Postal code	3260					3341				
Country		ed States				Unite	d States			
Telephone		071591	until			Lhovo	lived at thi	o oddro	oo oinoo:	
	20	ddress is valid 12	2014	DD/MN	I/YYYY	01	lived at thi	)6	2001	DD/MM/YYYY
Email Address	feldm	nan.matthew1	@gmail.com						ry clearly, we will ι	se your email to application process.
A(3) Programme of S	tudy						commi	armouto vi	nar you dariing and	арриовион ргоосос.
Date you wish to sta				Study m	<b>nde</b> (tick on	e only)		Pleas	se note: not all co	urses are available
Date you wish to start       Study mode (tick one only)       Please note: not all courses are available part-time – see individual course entry in the online Qualifications Directory										
Details of your prog	ramme	e of study. Co	nsult the appropriate	entry in th	e Qualification	ons Direct	tory before	complet	ing the fields in th	is section.
Course code	Progr	amme of stud	y or research area	l _	Departm	ent			Final Award	Duration
EGEG22	PhD	(Probationar	y) in Engineering		Dept of	Engine	ering		PHD	4

**FULL NAME** 

#### A(4) College membership (please consult the College section of the Prospective Students area of the Board's website)

You may choose up to two Cambridge Colleges to consider your application. If you do not indicate a choice in this section, the Board of Graduate Studies will allocate a College to you. You cannot amend these choices after you have submitted your application. Should you receive a conditional offer of admission from the Board, your application will be sent to your 1st choice College and then your 2nd choice College. Should neither College offer you membership, your application will be circulated to other Colleges.

In the College Choice Form below, write "1" in the box next to your 1st choice College, and "2" in the box next to your 2nd choice College. No other choices will be taken into consideration. If you have studied at Cambridge before, please also write the name of your previous College in the 'Existing College Membership' section on the right.

College Choice Form								Exi	isting	College I	Membership	
Do not tick the boxes – you m	ust v	write a r	number to show yo	ur or	de	er of preference.		If y	ou ar	e already	a member of	a Cambridge
Christ's		Home	rton		]	Queens'		Col	lege, į	olease in	dicate which o	one. This is for and does not
Churchill		Hughe	es Hall			Robinson		constitute an application to the College.				
Clare		Jesus			]	St Catharine's		Coli	lege			
2 Clare Hall		King's			]	St Edmund's		Nar	ne			
Corpus Christi		Lucy (	Cavendish *			St John's			you wish your application to be considered this College, you must also name it as			
1 Darwin		Magda	alene		]	Selwyn		one	e of y	your choices in the College Choice n the left.		
Downing		Murra	y Edwards *		]	Sidney Sussex		You	— u shou	ld contac		f you consider
Emmanuel		(forme	rly New Hall)		]	Trinity		nar	ning a	nother Co	llege as first ch	oice.
Fitzwilliam		Newnl	nam *		]	Trinity Hall						
Girton		Pemb	roke		]	Wolfson						
Gonville and Caius		Peterh	nouse		]	Open Application		* C	olleges	for wome	n only	
A(5) Current Study  Fick one: X I am currently studying, as follows: I am not currently studying – go to A(6)												
Name of University	, -		Subject					,			Date to be	Expected
(include country)			(include Faculty/I	Depar	rtı	ment)	Degree	•		Grade		
University of Florida (United States)			Electrical Engined (Electrical/Compu			ng)	BS		Aug	2010	Dec 2014	3.96/4.0
A(6) Previous degree-level s	tudy	(most	recent first)									
Name of University (include country)			Subject (include Faculty/I	Depar	rtı	ment)	Degree		Date	started	Date obtained	Grade
	If you have worked on a research project, either for your first degree or subsequently, please describe your work below; your account should be intelligible to anyone who is not a specialist in your field. If you have no such research experience, leave this space blank; a blank entry will not prejudice your application.											
Worked on computer vision of an autonomous robot for the IEEE robot competition for my undergraduate thesis project. This involved transforming a real video feed from a camera into bird's eye video feed. This new image was scanned for features and used, along with telemetry from the robot's wheels, to pinpoint the coordinates of the robot relative to features in the environment around it. This project applied perspective geometry techniques, SIFT, and SLAM algorithms.												

## A(7) Scholarships, prizes and other distinctions obtained (list only the most important)

Name of award	Reason for award	Date of award	Value of award, if any
JM Rubin Foundation Award	Academic Achievement	May 2010	38400
Dykes Scholarship	Academic Achievement	Sep 2013	2000
Sias Scholarship	Academic Achievement	Jan 2013	2000

## A(8) If you have made other applications to Cambridge this year, give details here

Degree	Programme of study / research	Department

## A(9) If you have made applications to other institutions this year, give details here

Degree	Programme of study / research	Institution	Department	Country

#### A(10) Employment

From	То	Post Held	Name and Address of Employer
Aug 2014	Dec 2014	i i baching Aggigiani	University of Florida 323 Tigert Hall P.O. Box 11311 Gainesville 32611
May 2014	Aug 2014	Avionics Engineering Intern	SpaceX 1 Rocket Rd. Hawthorne 90250
Jan 2013	May 2014		instaEDU.com 530 Howard St. Suite 100 San Francisco 94105

Are you currently	employed?	Yes X	No

Will you be employed at least 40% full-time by the University of Cambridge while studying for this course?

# A(11) Names and addresses of your academic referees

Prior to completing this section, please see the 'How to Apply' section of the Board's website for information regarding references. If your referees do not have e-mail addresses, please note that you are responsible for contacting them to request a reference. There is an electronic reference system in place that will automatically contact your referees if you provide an email address for them.

	First academic referee	Second academic referee
Name	Keith Stanfill	Scott Banks
Title	Dr	Dr
Address	378 Weil Hall	MAEA 318
	P.O. Box 116595	P.O. Box 116250
Town or city	Gainesville	Gainesville
County/State or Province	Florida	Florida
Country	United States	United States
Postal Code	32611	32611
Email (University account where possible)	stanfill@ufl.edu	banks@ufl.edu

FELDMAN, Mr Matthew Stephen

#### A(12) Summary details of research proposal or reason for applying for the course

Title and statement of your research degree proposal, or reason for wanting to undertake the course. The Department to which you are applying may in addition require a separate, more detailed, research proposal; check the online Qualifications Directory for further information.

If you wish to work under a particular supervisor, state that person's name here:

Simon Moore

Applicants for PhD, MSc or MLitt only.

As transistors are approaching a physical limit on miniaturization, it will be necessary to use innovative computer architectures to continue to improve the processing power of machines. Biologically-inspired parallel architectures will be the key to unlocking a wide variety of tomorrow's technologies, such as radiation-tolerant deep space computers and low-power rapid image and audio processors. Today's technology provides us with the necessary tools for building and simulating large neural networks to gain insight on the hidden layers as well as understand how to effectively encode and process information. Although it has been demonstrated with custom FPGA systems that massively parallel neural networks are superior to traditional computer architectures such as GPGPUs and CPUs for certain tasks, massively scalable systems have yet to been built successfully. I have worked with Altera FPGAs throughout my undergraduate career undergraduate on top of real-world industry experience in designing, testing, and building electronic hardware and low-level software. By introducing novel ways of simulating the thermodynamics and behavior of neurons on Altera hardware in the Computer Laboratory, it will be possible to solve the scalability issue. This increase in scalability will inevitably cause simulations to run into the memory wall, as fetching data out of RAM will become the bottleneck rather than the processing speed of the network. Therefore, it would be advantageous to have a large input layer to the neural network that comes from a device such as a silicon retina, rather than RAM. The entire data vector from this kind of sensor would be readily available to the network immediately, similar to how the brain processes sensory input, eliminating the issue of the memory wall. I would study integrating alternative data vector sources to the currently existing hardware for the BIMPA project.

#### A(13) Part-time research degrees (part-time applicants only)

If you propose to study for a part-time research degree, please state your reasons for wishing to study **part-time** here. If you intend to remain in employment while studying, give details.

TI	his is not required since you have currently opted for Full-time study

#### A(14) Additional information in support of your application

You may write here your non-academic activities or any special circumstances not evident from other answers in this application, that you wish to draw to the attention of the assessors of your application. The Department to which you are applying may require a CV to be submitted with your application, check the online Qualifications Directory for further information. If you are seeking funding from the Cambridge Trust, you will be asked to give more details of your achievements in a separate section.

My largest non-academic activity as an undergraduate has been the University of Florida Juggling Club. While the organization has taught me marketable skills, such as performing on stage and international networking, it has also been an outlet for abstracting my knowledge of mathematics and physics. Being an engineer, I am perpetually curious about the equations behind a system. "Siteswap" is a set of rules that dictate and describe juggling, and new patterns can be discovered on paper before they are ever imagined in real life. Furthermore, trajectory equations can be applied to juggling patterns to uncover surprising phenomena, such as how there are instances when a five-club pattern has all clobs anti-parallel with one another. My passion for engineering is not bounded by lab and academic projects, but is a tool that I use in my daily life.

#### A(15) Career goals and future aspirations

Please give an outline of your future career plans and intentions and explain how your proposed studies in Cambridge will help you achieve these aims.

Although studying Electrical Engineering as an undergraduate has given me a deep understanding of modern electronics at all scales, from the solid state physics of devices to the architecture of global networks, I believe that neuromorphic engineering will be a huge player in the future of computing. The digital design and software concepts I learned as an undergraduate will not necessarily translate when developing on neuromorphic systems. My studies in the University of Cambridge's Department of Engineering would give me the most rigorous understanding of neuromorphic technology and allow me to work ahead of the trajectory of the field, rather than behind it. As stated by the computer pioneer, Alan Kay, "those who are serious about software build their own hardware." Software can only be optimized when the designer has a profound understanding of the underlying hardware and architecture. Ultimately, I hope to leverage neuromorphic systems to solve the two problems that are most important to me; advanced personalized education, as it is one of the Grand Engineering Challenges of the 21st century, and radiation-resistant computing for deep space applications, as spending time working at SpaceX has only galvanized me in my goal of making humans a multiplanetary species.

ELDMAN, Mr Matthew Stephen	
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	SECTION B: Application for funding (academic year	r 2015/16 ONLY)	
Please use this form to app	bly to the funding bodies listed below; you should check their individual	websites for full information about	t eligibility criteria.
Please select at least one t	ick box on this page.		
If you <b>do not</b> wish to apply proceed to Section C	to any of the funding bodies listed below please tick this box and		
If you <b>do</b> wish to apply for f than one box to apply to me	funding, please tick the relevant box(es) and complete any additional quality funding bodies if they believe they are eligible.	uestions where required. Applican	its may tick more
Scholarship	Eligibility and deadline	How to apply	I wish to apply
Gates Cambridge	For citizens of countries outside the UK. Deadlines: 15 October 2014 (US citizens normally resident in the USA), 2 December 2014 (all other eligible applicants).	Tick box on the right and complete sections B1 and B2 below.	X
Cambridge Trust	For citizens of countries outside the UK. Deadlines 2 December 2014 (international applicants) and 9 January 2015 (EU applicants, excluding the UK).	Tick box on the right and complete sections B3 and B4 below.	
Cambridge Home Student Scholarships Scheme	For citizens of the UK. Deadline: 9 January 2015.	Tick box on the right.	
Economic and Social Research Council	For UK and EU citizens applying for a research degree in economic and social research. Deadline: 9 January 2015.	Tick box on the right.	
Arts and Humanities Research Council	For UK and EU citizens applying for a research degree in arts and humanities. Deadline: 9 January 2015.	Tick box on the right.	
Other Research Councils (BBSRC, EPSRC, MRC, NERC and STFC)	For UK and EU citizens applying for a research degree in these subject areas.  Deadlines are varied and awards are administered by individual departments.	Tick box on the right and enquire with department.	
Supporting documentation required supporting documents	on: please note that after submitting the application form by the require entation.	d deadline, you have a further 14	days to submit the
B(1) Gates Cambridge S	cholarships		
	s please explain why you are applying for a Gates Cambridge Scholars <a href="c.org/apply/">c.org/apply/</a> for more information)	hip and how you meet the four ma	ain criteria (
my body physically and men my engineering side was ins technology to proliferate edu	ning and juggling simultaneously, and it has become an inseparable part of tally, it has been a vehicle for targeting specific issues that are important to pired by the community's mission to incorporate One-Laptop-Per-Child devication and bring more of the world into the 21st century. I successfully brolsfying to break 22-year-old records, the partnership with Rhotia Valley made	me. When I first heard about Rhotia ices into the primary school, as it app se two joggling world records to raise	a Valley, Tanzania, plied inexpensive
was when one of the elder m still struggling." This momer third record to raise awarene supporters. Though I was so a live interview for a Minneso banter and demeaning of the	se records, I travelled to Japan and met victims of the Tohoku Earthquake in the in the town told us, "when you return to the big cities in America, do not at galvanized me into taking action while conducting summer research on not ass and support for this Japanese community and spent countless hours traduccessful in breaking the record and raising support, this journey was sprink of the record and raising support, this journey was sprink of the record and raising support, the part of the record and raising support, the part of the record and raising support, the journey was sprink of the record and raising support, this journey was sprink of the record and raising support, this journey was sprink of the record and raising support, this journey was sprink of the record and raising support, this journey was sprink of the record and raising support, this journey was sprink of the record and raising support, this journey was sprink of the record and raising support, this journey was sprink of the record and raising support, this journey was sprink of the record and raising support, this journey was sprink of the record and raising support, this journey was sprink of the record and raising support, this journey was sprink of the record and raising support, this journey was sprink of the record and raising support, this journey was sprink of the record and raising support, this journey was sprink of the record and raising support, the record and raising support, the record and raising support is provided in the record and raising support in the reco	forget about us. The media forgot a anomaterials at Rice University. I de ining and assembling a team of coac ded with unusual obstacles, such as the experience of candidly respondin oint in my personal growth. It was the	about us but we are ecided to attempt a ches, media, and being invited to do g to their malicious
nanomaterials, space electro- interdisciplinary approach to Electrical Engineering has al Laboratory at the University enable my two long-term goa	reflection of my passion for engineering. Although my research and industry prices, and photonics, these experiences have driven me towards my true into neuromorphic engineering, which will be necessary as the paradigm of conflowed me to master the basic tools to build complex electronic systems, who of Cambridge, allowing me to help pave the future for the next generation of als; making humans a multiplanetary species and advancing personalized ear, through my experience working at SpaceX and my partnership with Rhotic	terests. They have prepared me to Inputing changes. Graduating Summich I could apply to the BIMPA projet fomputing. Ultimately, I hope this ducation. Although I have already to	have a creative and na Cum Laude in ect in the Computer new technology will aken steps in

# B(2) Details of your personal referee for the Gates Cambridge Scholarship

Your personal referee should be someone of appropriate standing who can comment on your suitability for a Gates Cambridge Scholarship (e.g. an academic or employer who can comment on your academic ability, leadership capacity and commitment to improving the lives of others). For full details see <a href="http://www.gatescambridge.org/apply/references.asp">http://www.gatescambridge.org/apply/references.asp</a>.

The personal referee should not be a family member, a friend, or yourself.

Name	Albert Lucas	Title (Mr/Mrs/Miss/Dr etc)	Mr
Address	3001 North Kings Highway		
	Suite 262		
Town or city	Myrtle Beach		
County/State or Province	South Carolina		
Country	United States		
Postal Code	29577		
Email	a.lucas@isjf.org		
Re-enter Email to Confirm	a.lucas@isjf.org		

# B(3) Cambridge Trust

**FULL NAME** 

## B(4) Financial details for the Cambridge Trust

# Estimated $\underline{annual}$ amount in £ sterling required for your proposed course at Cambridge

You will need to consult the following webpage for estimated course costs: www.admin.cam.ac.uk/students/gradadmissions/prospec/studying/feecost/fulltime.html

University Composition Fee (annual amount) £ 7362

Maintenance allowance (*minimum* annual amount) £ 12530

Total estimated annual financial commitment required £ 19892

# Funds you are confident of raising annually to finance your course

Please give as much detail as possible of the funds you are able to raise annually. Note: this information is only used by the relevant funding bodies when making decisions on scholarships and for no other purpose. If you need to convert your currency into £ sterling, you should use a currency conversion site such as <a href="https://www.xe.com">www.xe.com</a> or <a href="https://www.xe.com">www.xe.com</a> or <a href="https://www.xe.com">www.ce.com</a> or <a href="https://www.xe.com">www.ce

Source	Details	£ per year	
Scholarships and grants Please give details of any scholarships and/or grants that you have secured for your course at Cambridge		£	0
Personal funds Please give the source(s) and amount(s) of any personal funds you are able to contribute towards the cost of your course (e.g. income, savings, capital, etc)	Savings	£	8000
Other funds Please give the source(s) and amount(s) of any other funds you are able to contribute towards the cost of your course		£	0
Tot	£	8000	
Annual shortfall, if any, between the total funds available and the cost of your course		£	11892

# Please give details of any scholarships tenable at Cambridge which you have applied for (or plan to apply for)

Awarding body	Date of decision	Tenure (years)	Annual Value £
Gates-Cambridge	Apr 2015	3	19892
Cambridge International Scholarship	Apr 2015	3	19892

FULL NAME

#### **SECTION C**

#### C(1) Next of kin

Name	Laura Feldman
Address	11595 Waterbend Ct
Town or city	Wellington
County, province or state	Florida
Postcode/Country	33414 United States
Telephone	5617077924

#### C(2) How did you hear about graduate programmes at Cambridge?

e.g. Prospectus, Internet, British Council, Careers Service etc (please specify)

University Counsellors

#### C(3) Declaration and Data Protection

This document forms the legal basis of your application to 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. Read the following statement carefully before you sign your application. **We cannot accept your application without your signature and the date below.** 

- 1 DATA PROTECTION ACT (1998)
  - The University of Cambridge, the Cambridge Colleges, Gates Cambridge and the Cambridge Commonwealth, European and International Trust will process your personal data (as defined by the Data Protection Act 1998) for the purpose of processing your applications for admission and funding, including as described on the two Parts of the Personal Data Sheet below:
  - we may keep a copy of information provided in respect to your application and use the information to collect anonymised statistics or monitor equal opportunities (or both);
  - we may use or disclose information provided in respect of your application for research purposes, but no information which could identify you will be published;
  - we will confirm that you are an applicant or student to banks and other third party organisations, as requested by you in writing;
  - we will share your information as necessary with your referees; the appropriate staff at the Cambridge Colleges, the Cambridge Trust and Gates Cambridge and the University; your current and former educational institutions; the Student Loans Company; and in the case of international applicants, the British Council or appropriate agency;
  - in order to prevent or detect fraud, we may provide information from your application to outside organisations including the police, the Home Office, local authorities, examination boards or awarding bodies, and the Department for Work and Pensions and its agencies;
  - where relevant and as required, we will provide information from your application to UK Visas and Immigration in order to act as your sponsor for visa purposes;
  - if accepted, we will further use your personal data in any manner and for any purposes described on the relevant <u>Student Gateway</u> pages, as published on the University website and amended from time to time;
  - if accepted, we will return data about you to the Higher Education Statistics Agency (as described at the following website: <a href="http://www.hesa.ac.uk/collection-notices">http://www.hesa.ac.uk/collection-notices</a>) and other external agencies as required;
  - if accepted, and if you subsequently apply to continue as a graduate student, all of the material contained in your current application (with the exception of Part 2 of the Personal Data Sheet) will be made available to the parties mentioned above, alongside your continuation application.
- I certify that all the information given in this application is complete and accurate, and I understand that if I have given false or misleading information the University of Cambridge will not admit me as a Graduate or Postgraduate student, and may take legal action against me.
- 3 I certify that I am the original and sole author of all work submitted as part of this application, except where clearly indicated otherwise.
- 4 I understand that if my application is unsuccessful, the papers relating to it will be destroyed, and cannot be returned.

NAME (PRINT)	SIGNATURE	DATE (DD/MM/YYYY)

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# Personal Data Sheet



The Personal Data Sheet is circulated to departments along with the rest of your application, but information on this sheet will not be considered when making the academic decision on whether to make an offer of admission. The sheet is circulated because if you do declare a disability in Section (2) below, it may be helpful for your department to know this in the event that they wish to organise an interview, so that any relevant adjustments can be made. If you are made a conditional offer, this sheet will also be sent to Colleges that consider your application. See the Board's website for further information about support for disabled students.

Note: there are two sides to this form.

Name (legal)			Matthew			Mr
( )	Last (family)		Fir	st and middle		Title (Mr/Mrs/Miss/Dr etc)
(1) Abo	ut your family while you are in C	ambridge				
	give details here by ticking the appunt of maintenance required for each.	•	-	•	•	
Х	I will be unaccompanied					
	I shall bring a partner or spouse	Name of partner o	or spouse*:			
		Is he/she also app	lying for graduate study a	t Cambridge? (tick	(box)	
		*If your partner is eith they have used in the	ner an applicant to the Univer eir application.	sity of Cambridge or	already in residence	e, please give the name
	I shall bring one child	Date of birth:		(DD/MM/YYY	Y)	
	I shall bring a second child	Date of birth:		(DD/MM/YYY	Y)	
	I shall bring a third child	Date of birth:		(DD/MM/YYY	Y)	
Will all th	he people indicated be financially	dependent on you?	Yes X No	If no, please g	ive details below:	
	port needs relating to disability it it is the appropriate box below. If y		isability, special needs or	a medical conditi	on, use code 00	('I have no disability'). If
you do r	not wish to provide any information	in this section, use	code 97 (Information refu	ısed').		,
individuconditio	ne Equality Act 2010, a disability is al's ability to carry out normal day n which is likely to require addition bleting this section you will be put	to day activities. We all support during the in contact with the D	invite disclosure from any eir time at Cambridge.	yone who feels the to establish what	y may have a dis	ability or other
to study	effectively. The Disability Resource	e Centre works clos	ely with the Board of Grad	duate Studies Adm	hissions Office.	
X	I have no disability (00)	condi	e a long standing illness tion such as cancer, HIV, iic heart disease, or epiler	diabetes,		nave a serious visual rrected by glasses (58)
	I have two or more impairments disabling medical conditions (08)	and/or depre	re a mental health cond ession/schizophrenia/anxi der) (55)	etv.	I have a disability medical condition	r, impairment or not listed above (96)
	I have a Specific Learning Difficult Dyslexia/Dyspraxia/AD(H)D (51)	issue issue	e a physical impairment o s (e.g. difficulty using arm Ichair or crutches) (56)		Information refus	ed (97)
	I have a social/communication impairment such as Asperger's syndrome/other autistic spectrum disorder (53)		deaf or have a serious rment (57)	s hearing		

FELDMAN, Mr Matthew Stephen

# (3) About your financial situation

(This information is helpful to Colleges who need to estimate the likelihood of you being able your application)	e to take up your place, but will not prejudice
If you are not successful in obtaining a scholarship, will you be able to fund your studies from	m private funds?
Yes (please tick)  X No	
Signature	Date