THE UNIVERSITY *of* EDINBURGH
College of Science & Engineering

Proposal for New Degree Programme
Stage 1

Contents

Key Contacts
Should you require any assistance please contact:

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1 OVERVIEW OF PROGRAMME

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1.1 ABOUT THE PROGRAMME

Title of programme	PhD with integrated study in Natural Language Processing
Intended Award	PhD
Alternative awards	PGDip, PGCert, MSc by Research
School	Informatics
Programme Director	Dr. Adam Lopez and Prof. Frank Keller
Programme start dates	01/09/2019
SCQF level of highest award	12
Total credit value of programme *(for highest award)*	720
Partner institution(s) if any	

Mode of delivery	On campus	X
(Please ✓ *those which apply to this programme)*	Online	
	Blended learning	
	FT	X
	PT	
	Intermittent	

Expected length of programme	FT	4 years
	PT	
	Intermittent	

Description of the programme and its structure (maximum 150 words)

The aim of the proposed PhD programme is to train the next generation of researchers in natural language processing (NLP), the field of AI that builds systems that translate text, recognize or produce speech, answer questions, retrieve documents or facts, respond to commands, summarise articles, and

simplify texts for children or non-native speakers. NLP is an interdisciplinary field that integrates computer science, maths and statistics, engineering, linguistics, cognitive science, and psychology. Students entering this programme will have a range of different background, which requires a training approach that is more flexible than the standard three-year model. We have therefore designed a four-year program of the type "PhD with integrated training" which interleaves training at the level and duration of a master's degree (180 credits of courses and project work) with PhD research (540 credits). Students attend foundational courses and do a group project and an individual project in year 1, while also starting their PhD research. They will take a small amount of more specialized courses in years 2 and 3, while increasing the amount of PhD research they do. Year 4 is meant to be PhD research only.

Career, employability, and opportunities for continuing professional development.

The demand for NLP practitioners in industry, science, commerce, and the public sector outstrips supply. Companies like Google and Amazon are aggressively recruiting NLP experts trained at PhD levels because there are relatively few available.

Edinburgh PhD graduates in NLP have obtained academic positions in some of the best universities in the world; examples include the University of Illinois at Urbana-Champaign, the University of Melbourne, the University of Texas at Austin, the University of Pennsylvania, Tsinghua University, Peking University, Hosei University, Saarland University, Stellenbosh University, UCL, the University of Warwick, the University of Aberdeen, and Bangor University.

Our PhD graduates have also obtained industry positions at Amazon, Facebook, Google, Microsoft, Apple, Thomson Reuters, as well as at a large number of SMEs and Startups.

2 BUSINESS CASE

This section should be used to outline the business case for the proposed programme. Before completing this section market research should have been undertaken.

2.1 STRATEGIC PLANNING, RECRUITMENT & COMPETITOR ANALYSIS

Programme Title	PhD with integrated study in Natural Language Processing

Programme Proposer	Dr. Adam Lopez and Prof. Frank Keller
Strategic Planning	Expanding doctoral training is a strategic goal of the university and the college. The proposed program is in an area of high demand and is linked to a proposal for a UKRI Centre for Doctoral Training, which would provide funding of approximately £6.5M for an intake of 11 students per year over 5 years.
Recruitment *Please provide a detailed commentary on your marketing and recruitment strategy.*	Demand for PhD graduates in NLP is currently extremely high (see Section 1). Recruitment and marketing for this program will be managed in the same way as for the current CDT in data science, which attracts hundreds of highly qualified applicants each year. Existing PhD programs (such as the 3-year PhD in ILCC) will benefit from having such a high profile, well-funded program. Resources will be shared with existing PhD students to the extend allowed by the funder. Possible careers include academia and industry, see Section 1.
Competitor Analysis *A competitor analysis report provides a better understanding of the marketplace and competition, from the going rate for tuition fees to the unique selling points and marketing strategies of competitor programmes.*	We mainly see ourselves competing with the top PhD programmes in the US, including Stanford, MIT, CMU, University of Washington. The proposed programme is more similar to a US PhD, given its 4-year duration and its integrated taught component. We would expect this to strengthen our international competitiveness. The only UK competitor that we're aware of is Sheffield, who have a similar CDT bid under review. In comparison to Sheffield, our programme is much broader and more interdisciplinary.

Competitor Fees *Provide the fee structure (£) of three competitors, preferably those mentioned in the competitor analysis. These may be UK or overseas competitors.*	Institution	Programme	Fees	
			Home	Overseas
	MIT	PhD in Computer Science	$49,892	$49,892
	University of Washington	PhD in Computer Science	$18,852	$32,760
	University of Sheffield	PhD in Computer Science	£4,260	£21,450

2.2 FEES AND COSTING		
Programme fees *Fees are expressed per academic year in British pounds (£). For PGT programmes, a Programme Costing Template will also be required for Fee Strategy Group.*	Home-Scotland / EU	£4,260
	Home-RUK	£4,260
	Overseas	£21,000
Fees for each new PGT programme are sent by College to the Fee Strategy Group (FSG) for review and approval. The FSG has developed a Programme Costing Template to give FSG insight into the anticipated profitability of a programme and where it sits within its market. The Fees Costings template, and guidance from FSG on filling out the template, is included in the spreadsheet attached to the right.		FSGProgrammeCosting Template

Additional Programme Costs (PGR only)

Additional costs to the student should be noted and justified in the table below. These should consist of items that are over and above the basic provision that should be available to all students and should reflect the special additional costs associated with the specific programme of study. Individual items over £200 should be noted on a separate row.

Item	Cost	% of Total
computing infrastructure etc.	£1000	100
Total:	£1000	100

2.3 ANTICIPATED AND PROJECTED ENROLMENTS			
What are the anticipated and projected enrolments over the next three years?			
	Year 1	Year 2	Year 3
Home	9	9	9

RUK (UG only)			
Overseas	2	2	2
Supporting Research What market research has been planned or completed to support the predicted student numbers?	These figures are prescribed by the terms of the UKRI call for CDTs. Given the current high numbers of applicants for our 3-year PhD programme in ILCC (124 applicants in 2018/19, most of which want to study NLP), as well as for the 4-year CDT program in Data Science (266 applicants in 2018/19, again with a high proportion in NLP), we have no doubt we will be able to recruit sufficient student numbers. This programme is contingent on URKI funding and it will end when the funding ends.		

2.4 PLANNING AND RESOURCES

New Courses	3 new courses will be proposed concurrently with this programme. They will be discussed by the Informatics BoS on 3 Oct 2018.
Facilities and Equipment	The PhD students will be accommodated in the Bayes Centre. New computing equipment will be purchased on the URKI CDT grant that accompanies this proposal. No additional library resources or specialized equipment will be required.
Staff	Both administrative staff and teaching support staff for this programme will be funded by the accompanying UKRI grant. This CDT involves 40 supervisors, which means the risk created by staff changes, retirements, sabbaticals is low.
Resource Sharing	This program will share resources with the existing PhD programmes in Informatics. Some resources sharing between CDTs at the college level is also anticipated. Course organizers of relevant courses have not been consulted, but we don't anticipate any problems, as the number of students in this program is small (11 per year).

2.5 COLLABORATIVE PROGRAMMES

Additional information is required for new collaborative programmes, including jointly awarded taught and research degrees, and those involving supervision provided by an Associated Institution. All collaborative programmes require the development and approval of a Memorandum of Agreement (MoA).

Overseas partnerships must have a Memorandum of Understanding (MoU) in place before Stage 1 approval can be granted by the College.

All proposals for new collaborative programmes submitted for Stage 2 approval will require a draft MoA as part of the submission.

Separate guidance is available for the development of collaborative programmes: http://www.ed.ac.uk/governance-strategic-planning/collaborative-activity/guidance-templates

The Associated Institutions Policy is available here: https://www.wiki.ed.ac.uk/display/GPAPFCA/Associated+Institutions

- *Please provide brief details of partnership below, including confirmation of which institution will be the Administering University, the fee structure and confirmation of any external funding (if available).*

3   CONSULTATION AND APPROVAL

Programme Title:	PhD with integrated study in Natural Language Processing
Programme Proposer:	Dr. Adam Lopez and Prof. Frank Keller

3.1   CONSULTATION

Please confirm consultation with relevant stakeholders has taken place.

Consultation is an essential part of the Programme Approval process and is line with the new Quality Code, *'Expectations for Quality'*.

Stakeholder	Yes	N/A
School Director of Professional Services	☒	☐
School Director of Teaching/Head of Graduate School	☒	☐
School Teaching Organisation/Graduate School staff	☒	☐
Information and Support Services (including Academic Support Librarians)	☐	☒
Students (SSLC/student representatives)	☐	☒
Partner School staff (e.g. joint programmes/shared courses etc.)	☐	☒
Employers (and/or Careers Service)	☐	☒
Industry and Professional Bodies	☐	☒
External consultation (e.g. External Examiners for related programmes)	☐	☒
Please note any other consultation		

Please comment briefly on any outcomes from the internal consultation process, including consultation with students:

> The CDT proposal was comprehensively vetted at the College and School levels before it was submitted to UKRI.

Please comment briefly on the outcomes of any external consultation undertaken:

> The proposal is currently subject to external peer review as part of the UKRI selection process. We will take into account any comments regarding the programme received from reviewers and during the selection interview.

3.2   SCHOOL BOARD OF STUDIES REVIEW AND APPROVAL

Confirmation of approval of the proposal at the School Board of Studies should be entered below.

Date of BoS:
Convener Name:

Comment and Approval (BoS Minute):
Please provide either a link to the minutes of the Board or a copy of the relevant text from the minutes.

3.3 HEAD OF SCHOOL REVIEW AND APPROVAL

Head of School:
Please print name
Comment and Approval:
Signature:

3.4 COLLEGE CURRICULUM APPROVAL BOARD REVIEW AND OUTCOME

Date of CCAB:	
Convener Name:	
Stage 1 Outcome (please select as appropriate)	
Permission to proceed to Stage 2	☐
Permission to proceed to Stage 2 with conditions	☐
Proposal rejected with recommendations	☐
Proposal rejected	☐
Comment:	

Document Control

Date approved: Start date:	Amendments:	Date for next review: April 2019
Contact name & role: Matt Elliot	Department: College Academic Affairs	Email: Matt.Elliot@ed.ac.uk
If you require this document in an alternative format please email: DeanQA@ed.ac.uk		