 **Research Degrees Examination**

**Entry Form (RD1)**

*Please email to the Research Degrees team at least* ***four months*** *prior to the submission of your thesis (*[*researchdegrees@kcl.ac.uk*](mailto:researchdegrees@kcl.ac.uk)*)*

**Section A: TO BE COMPLETED BY CANDIDATE – you must complete all fields**

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| **Student ID number:**  1531446 | **Surname:**  Joglekar | | **First names:**  Sagar | |
| **Name of Supervisor:** | Dr. Nishanth Sastry | | | |
| **Intended date of submission:** | 15/04/2019 | **Faculty:** | | Informatics |
| **Field of study:**  **(Please see KCL webpages for fields of study)**  **(Please note: this title will appear on your degree certificate)** | Computer Science | | | |
| **Title of thesis:** | ﻿From communities to crowds: quantifying the subjective | | | |

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| **Examination to be entered for:** | **PhD** | **MPhil** | **MPhilStud** | **MD(Res)** | **Specialist** **Doctorate** | **Joint PhD** |
| **King’s College London Staff:** | **Yes** | **No** | **If student is on a Joint PhD with a partner institute please provide details:** | | |
| **Thesis incorporating publication** | **Yes** | **No** |

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| **Was ethical approval required for your research?** | **Yes****No** | **If yes, was it obtained?** | **Yes****No** |

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| **If you do not wish your supervisor to be present at the examination tick here:** |

NOTE: In the interests of scholarship, a thesis which is accepted by King’s College London for the award of a Research Degree is made available for consultation as a print version in the Library of the College, and online as an electronic version in the College institutional repository. The copyright of the thesis is retained by the author.

**Declaration:**

1. I authorise that the thesis presented by me in \*[ 2019 ] for examination for the above Research Degree shall, if a degree is awarded, be deposited as a print copy in the College Library and as an electronic copy in the College institutional repository and that, subject to the conditions set out below, my thesis shall be made available for public reference, inter-library loan and copying, and be made freely accessible to individuals and institutions via the internet. I understand that through the medium of the internet, files will also be available to automated agents, and may be searched and copied by text mining and plagiarism detection software.

2. I confirm that, with the exception of any third party copyrighted material where permission for inclusion has not been obtained (see 6 below), the electronic copy I will submit will be the same in all respects as the print copy.

3. I authorise the College authorities to collect, create and supply relevant metadata for my thesis (including author, title, and abstract) for inclusion in any published list or electronic database of theses offered for higher degrees, including the British Library Electronic Theses Online Service (EThOS), DART Europe E-theses Portal, and other recognised national and international theses databases.

4. I authorise the College, or its designated agents, to make a digital copy of my thesis for the purposes of deposit in the College institutional repository and British Library Electronic Theses Online Service (EThOS), and of accessibility, inter-library loan, and the supply of copies.

5. I understand that before my thesis is made available as described above, the following statement will have been included at the beginning of my thesis: ‘The copyright of this thesis rests with the author and no quotation from it or information derived from it may be published without proper acknowledgement.

6. I confirm that if my thesis includes any material where copyright is owned by a third party, I have sought and gained permission to include this material in any electronic version of my work.

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8. I warrant that this authorisation does not, to the best of my belief, infringe the rights of any third party.

9. I understand that in the event of my thesis being not approved by the examiners, this declaration would become void.

\*Please state year.

**Description of thesis - TO BE COMPLETED BY CANDIDATE**

All candidates are required to submit a short description (approx. 300 words) of the content of their thesis to assist in the suitable appointment of examiner. It must not extend over one side of A4 paper and must be typed.

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| Research in the field of recommendation systems have shown that *subjective preferences tend to follow deterministic patterns, when looked at data in large sample sizes*. This principle underpins several of our present day recommendation applications like online e-commerce or restaurant recommendations, or music recommendation. With the ever pervasive nature of the internet, we as a society have gone beyond treating the online spaces as a tool to access information, and have started treating them as a natural extension of the self. We spend more time than before as a part of a larger networked community, exchanging thoughts, debating ideas, expressing creativity and ``socialising''. We also sometimes indulge in expression of human emotions like empathy, anger, sadness and sometimes seeking help. We also at times behave like crowds, participating in entertainment and engagement channels, offering a piece of our attention budgets. At such a juncture, I examine the thesis **"Can we quantify entities of subjective nature, if the data is large enough, and originates from human communities or crowds?"**. In this dissertation I develop data driven methods with the aim to quantify subjective qualities, through two case studies.I investigate the utility of said methods in designing interventions to improve the online and offline spaces.  In the first study I analyse on-line spaces involving networked communities where interactions between humans are purely with the intent of helping each other. I develop frameworks to abstract out the graphical structure of these interactions. I then investigate presence of perceived support by finding discriminative local and global structures in these communities. Using established inter-disciplinary theories, I argue that these structures, which we call motifs, are the signatures of a supportive processes in online conversations. This informs my analysis about the nature of peer support in these communities and paves the way to do actionable interventions in the area of perceived support in online networks.  In the second study, I investigate utility of crowd's perception of aesthetics in physical spaces. As such this utility indicates potential in designing better offline spaces using crowd perception.  I do so, by developing a pipeline that capitalizes on crowd sourced responses about perception of urban aesthetics. I develop a deep-learning driven framework, which is able to quantify the perception of intangible qualities like `beauty of a space' through a crowd sourced rating of google street view images. I show that a general pattern of beauty in urban spaces can be learnt through crowd sourced opinion and deep learning models. I further develop a generative model to simulate beautification of urban spaces. Through a detailed literature review of the field of urban design, I develop a measurement framework which can provide insights into the predictors of urban beauty. I then develop the necessary tools to evaluate these metrics using computer vision techniques. I validate the value of these metrics through expert survey and also validate the interventions using crowd sourced perception experiments.  Above all, in this dissertation, I contribute original frameworks and implementations of different approaches towards quantifying subjective signals, in communities and crowds. These approaches verify and validate several metrics developed for understanding subjective properties like perceived support and perceived aesthetics, at scale, which provides a path forwards for A.I. driven design of online and offline spaces. |

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| **Candidate signature** |  | **Date:** |  |

**Section B: TO BE COMPLETED BY THE SUPERVISOR - you must complete all fields**

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| **Name of Candidate:** | Mr. Sagar Joglekar |
| **Name of First Supervisor:** | Dr. Nishanth Sastry |
| **Name of Second Supervisor:** | Dr. Jose Such |
| **Subject Area Board: (see link)**  <https://www.kcl.ac.uk/campuslife/acservices/researchdegrees/sab/subject-area-board-sab.pdf> | Informatics |
| **Supervisor’s email address:** | Nishanth.sastry@kcl.ac.uk |

***PLEASE NOTE: Any expenses exceeding £350 for either examiner must be paid by the department.***

**Examiner nomination 1**

*(Both nominated examiners should normally be external to King’s College London. If you are nominating an internal KCL examiner, please enter these details under Examiner nomination 2)*

|  |  |
| --- | --- |
| Title and name: |  |
| Department and Institution: |  |
| Email address: |  |
| Telephone number: |  |
| Full address for correspondence: |  |

**Reasons for this nomination: (THIS SECTION MUST BE COMPLETED)**

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| Approximate number of research degrees examined in the UK: |  |

**Connections between candidates and examiners:**

Previous assessment of candidate (e.g. transfer to PhD registration status): **Yes**  **No**

Are you aware of any professional, academic or personal connections between the candidate and the proposed examiner: **Yes**  **No**

If yes, please give full details e.g. previous assessment, joint publications or joint holdings of grants:

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**Connections between supervisors and examiners:**

Please give details of any connections between the supervisors and the proposed examiner:

Joint publications: **Yes**  **No**

Joint holding of grants: **Yes**  **No**

Examination by nominee of supervisor’s previous students: **Yes**  **No**

Examination by supervisor of nominee’s students: **Yes**  **No**

Any other connections not listed above: **Yes**  **No**

If you have answered yes to any of the above, please provide full information below:

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**Examiner nomination 2**

*(Both nominated examiners should normally be external to King’s College London. However, if you are nominating an internal KCL examiner, please enter these details here)*

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| Title and name: |  |
| Department and institution: |  |
| Email address: |  |
| Telephone number: |  |
| Full address for correspondence: |  |

**Reasons for nomination:** **(THIS SECTION MUST BE COMPLETED. IF YOU ARE NOMINATING A KCL EXAMINER JUSTIFICATION SHOULD BE PROVIDED HERE ALONG WITH GENERAL REASONS FOR NOMINATION)*.***

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| Approximate number of research degrees examined in the UK: |  |

**Connections between candidates and examiners:**

Previous assessment of candidate (e.g. transfer to PhD registration status): **Yes**  **No**

Are you aware of any professional, academic or personal connections between the candidate and the proposed examiner: **Yes**  **No**

If yes, please give full details e.g. previous assessment, joint publications or joint holdings of grants:

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**Connections between supervisors and examiners:**

Please give details of any connections between the supervisors and the proposed examiner:

Joint publications: **Yes**  **No**

Joint holding of grants: **Yes**  **No**

Examination by nominee of supervisor’s previous students: **Yes**  **No**

Examination by supervisor of nominee’s students: **Yes**  **No**

Any other connections not listed above: **Yes**  **No**

If you have answered yes to any of the above, please provide full information below:

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**Examiner nomination 3 (FOR JOINT PHD STUDENTS ONLY)**

*(Please note this examiner will be a nomination from the Partner institute)*

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| Title and name: |  |
| Department and institution: |  |
| Email address: |  |
| Telephone number: |  |
| Full address for correspondence: |  |

**Reasons for nomination:** **(THIS SECTION MUST BE COMPLETED. IF YOU ARE NOMINATING A KCL EXAMINER JUSTIFICATION SHOULD BE PROVIDED HERE ALONG WITH GENERAL REASONS FOR NOMINATION)*.***

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| Approximate number of research degrees examined in the UK: |  |

**Connections between candidates and examiners:**

Previous assessment of candidate (e.g. transfer to PhD registration status): **Yes**  **No**

Are you aware of any professional, academic or personal connections between the candidate and the proposed examiner: **Yes**  **No**

If yes, please give full details e.g. previous assessment, joint publications or joint holdings of grants:

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**Connections between supervisors and examiners:**

Please give details of any connections between the supervisors and the proposed examiner:

Joint publications: **Yes**  **No**

Joint holding of grants: **Yes**  **No**

Examination by nominee of supervisor’s previous students: **Yes**  **No**

Examination by supervisor of nominee’s students: **Yes**  **No**

Any other connections not listed above: **Yes**  **No**

If you have answered yes to any of the above, please provide full information below:

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| **Supervisor signature** |  |
| **Date** |  |

I confirm that the examiners meet the criteria for appointment and that there is no connection between the student, the research and/or the supervisor and the examiners.

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| **Name of counter-signatory** |  | | |
| **Counter-signatory signature**  (see list on KCL webpages) |  | **Date** |  |