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UCL Student and Registry Services

researchdegrees@ucl.ac.uk

# Examiner Nomination Form UCL Research Degree Candidates: Introduction

# Please read the following before completing this form:

* Ensure you have carefully read the [Procedure for the Nomination and Appointment of Research Degree Examiners](https://www.ucl.ac.uk/academic-manual/sites/academic_manual/files/guidance_on_research_degree_examiner_nominations.pdf).
* Supervisors must complete sections A to D then pass the form to the Departmental Graduate Tutor to complete Section E. Departments must ensure that sections A to E (only) of the Nomination Form are completed before sending to [Research Degrees](mailto:researchdegrees@ucl.ac.uk) who carry out checks and send to the Faculty Graduate Tutor (FGT) for final approval. Do not send the form directly to the FGT.
* Clearly and fully explain any aspects of the nominations that do not fully comply with the guidelines for the nomination of examiners. Research Degrees will refer queries back to the supervisor or department as necessary, which can significantly delay the approval process.
* Submit this form to your DGT at least four months **prior** to the candidate’s intended thesis submission date.
* The candidate must have [entered for the examination](https://www.ucl.ac.uk/students/exams-and-assessments/research-assessments/examination-entry) before the examiners will be appointed. The candidate may submit their thesis before the examiners have been appointed.



Examiner Nomination Form for UCL Research Degrees Candidates

# Section A: Candidate and Supervisor Details

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| **Candidate Details** – Name and number as it appears on [Portico](https://evision.ucl.ac.uk/urd/sits.urd/run/siw_lgn) | | |
| Forename | **Wojciech Krzysztof** | |
| Surname | **Rozowski** | |
| Student Number | **17010481** | |
| Faculty | **Engineering** | |
| Department/Division/Institute (including research department, if applicable) | **Computer Science** | |
| Degree Award (i.e. PhD, EngD, DPsych) | **PhD** | |
| Is the candidate a member of UCL staff, excluding PGTAs?  If yes, please give details and dates of appointment    Where a candidate is a member of UCL staff, examiners from the same department as the student or supervisor(s) should not be used. If you nominate an internal examiner from your department for a candidate who is member of staff you must also nominate an independent Chair for the viva (see [Nomination Form for Viva Chair](https://www.ucl.ac.uk/academic-manual/sites/academic_manual/files/nomination_form_for_viva_chair_non-ioe.docx), which you must submit with this form.) | Yes  No | |
| **Principal Supervisor Details** – please provide details of candidate’s full supervisory team. Departments must keep supervisory details [up-to-date on Portico](https://evision.ucl.ac.uk/urd/sits.urd/run/siw_lgn). | | |
| Forename | | **Alexandra** |
| Surname | | **Silva** |
| E-mail | | [**alexandra.silva@ucl.ac.uk**](mailto:alexandra.silva@ucl.ac.uk) |
| Department/Division/Institute | | **Computer Science** |
|  | | |
| **Subsidiary Supervisor Details** | | |
| Forename | | **Samson** |
| Surname | | **Abramsky** |
| E-mail | | [s.abramsky@ucl.ac.uk](mailto:s.abramsky@ucl.ac.uk) |
| Department/Division/Institute | | **Computer Science** |
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| **Additional Supervisor (if applicable)** | | |
| Forename | |  |
| Surname | |  |
| Email | |  |
| Department/Division/Institute | |  |
|  | | |
| **Additional Supervisor (if applicable)** | |  |
| Forename | |  |
| Surname | |  |
| Email | |  |
| Department/Division/Institute | |  |

# Section B: Title and Description of Thesis

Please enter the full title of the thesis to be examined: Completeness Theorems for Behavioural Distances and Equivalences

**Please note:** If the thesis title has changed since the Exam Entry form was submitted, please email [Research Degrees](mailto:researchdegrees@ucl.ac.uk) to confirm the amended title.

Please enter the thesis description. The description should provide an overview of the thesis and enough information for a judgment to be made about the expertise required for its examination. 300 words maximum.

In automata theory and process algebra, it is customary to provide specification syntaxes for modelling computations as transition systems and to study logical systems for reasoning about the equivalence or similarity of systems described by the syntax. A central family of problems attached to this paradigm are questions of completeness, that ask whether every semantic notion of equivalence or similarity between transition systems can be witnessed through the means of axiomatic manipulation of terms. The key example of this approach is Salomaa’s axiomatisation of language equivalence of regular expressions, a specification language for deterministic finite automata.

This first part of this thesis studies completeness results of inference systems for reasoning about coalgebraic behavioural metrics. In many cases, such as probabilistic and stochastic systems, talking about the strict equivalence of states of transition systems is too restrictive. In particular, any perturbation in observed transitions would deem two states inequivalent. Originally considered for probabilistic systems, behavioural metrics provide a quantitative measure of the dissimilarity of behaviours. The field of coalgebra provides an abstract and uniform treatment of transition systems and recently generalised behavioural metrics beyond just probabilistic cases. Firstly, this thesis provides a completeness result for a shortest-distinguishing-word distance between languages represented by regular expressions. Secondly, this thesis provides a complete axiomatisation of the bisimulation metric for nondeterministic transition systems represented as terms of a string diagrammatic calculus.

The second part of this thesis looks at generative probabilistic transition systems and their language equivalence modelled using coalgebras over algebraic categories. Building on the recent work on proper functors and the study of positive convex algebras, the central result is a completeness argument for a Salomaa-style axiomatisation of a language inspired by regular expressions, where nondeterministic choice and Kleene Star are replaced with their probabilistic counterparts.

# Section C: Nominated Examiners

Internal examiners must hold a UCL contract (which may be an honorary contract). Your PGR Administrator can find information on examiner appointment frequency using the Research Degree Examiner view in [Portico](https://evision.ucl.ac.uk/urd/sits.urd/run/siw_lgn).

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| Part 1a: Internal Examiner Details | |
| Title: |  |
| Forename: |  |
| Surname: |  |
| Email: |  |
| Department/Division/Institute: |  |
| Subject Expertise – please demonstrate the suitability of the nominated examiner to conduct this examination: |  |

**Please note:** An internal examiner cannot examine more than once for the same supervisor during the previous twelve months and must not be supervising another current research degree student of either supervisor.

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| Part 1b: Internal Examiner Research Degree Examining Experience | |
| Number of **UCL** research degree examinations undertaken (please **do not** include MPhil-to-PhD upgrade exams) |  |
| Number of research degree examinations undertaken at any other institutions. |  |
| Please list below the other UK institutions: | |

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| Part 2a: External Examiner Details | |
| Title | **Professor** |
| Forename | **Filippo** |
| Surname | **Bonchi** |
| Email: | **filippo.bonchi@unipi.it** |
| Institution: | **University of Pisa** |
| Subject Expertise – please demonstrate the suitability of the nominated examiner to conduct this examination: | Prof. Bonchi authored several papers on which the thesis of the candidate is based and is one of the main figures in the research community of string diagrams that are used in this thesis. The first part of the thesis studies axiomatisations of the coalgebraic behavioural metrics, that were introduced by the “Coalgebraic Behavioural Metrics” paper coauthored by Prof. Bonchi. The approach to language semantics used in the second part of the thesis makes use of the framework developed in “Generalizing determinization from automata to coalgebras” which was also coauthored by Prof. Bonchi. |

**Please note:** An external examiner must come from outside the UCL community – i.e. they must not hold a UCL contract of employment or an honorary contract with UCL. A period of at least three years must have elapsed between holding a post at UCL and being nominated as an external examiner.An external examiner cannot examine more than once for the same UCL Department/Division/Institute during the previous twelve months.

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| Part 2b: External Examiner Research Degree Examining Experience | |
| Number of **UCL** research degree examinations undertaken (please **do not** include MPhil-to-PhD upgrade exams) | **1** |
| Number of research degree examinations undertaken at any other institution. | **6** |
| Please list the other UK institutions:  École Normale Supérieure de Lyon (France)  University of Udine (Italy)  École Polytechnique (France)  IMT School of Advanced Studies (Italy) | |

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| Part 3a: Second External Examiner Details – **only complete Parts 3a and 3b if no internal examiner can be nominated** | |
| Title | **Doctor** |
| Forename | **Clemens** |
| Surname | **Kupke** |
| Email: | [clemens.kupke@strath.ac.uk](mailto:clemens.kupke@strath.ac.uk) |
| Institution: | **University of Strathclyde** |
| Subject Expertise – please demonstrate the suitability of the nominated examiner to conduct this examination: | Dr Kupke is an expert in the field of coalgebraic methods in computer science, the main theoretical framework within which all the contributions of the candidate's thesis are made. With Dr Cirstea from the University of Southampton, Dr Kupke has been leading COVER (COalgebraic foundations for quantitative VERification) project funded by Leverhulme Trust that precisely focuses on the intersection of coalgebra and quantitative reasoning, which are the main themes of the thesis of the candidate. Moreover, his recent work on reasoning about lower bounds of behavioural distances relies on a similar technical setup to the one used in the first two content chapters of the thesis of the candidate. |
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| Part 3b: Second External Examiner Research Degree Examining Experience (if applicable) | |
| Number of **UCL** research degree examinations undertaken (please **do not** include MPhil-to-PhD upgrade exams) |  |
| Number of research degree examinations undertaken at any other institution. |  |
| Please list the other UK institutions: | |

# Part 4: Reasons for Nominating Two External Examiners (if applicable)

You may nominate two external examiners if you can give sufficient justification. Please provide a supporting statement explaining why you could not identify a suitable UCL-based examiner. **Please note**: two external examiners must not come from the same institution:

The candidate's thesis makes contributions to the category-theoretic and coalgebraic approach to formal semantics, which is a relatively small research community. While UCL has some researchers working in that field within the PPLV research group, the candidate and supervisor have closely collaborated with them, making them not eligible to be internal examiners.

At the same time, one of the recurring topics of the thesis is within the young field of behavioural distances that is not represented yet at UCL, but there are some UK-based experts, such as Dr Kupke that would be a good fit to examine the candidate instead of a UCL academic that would have to come from a completely distinct field of research.

# Part 5: Reasons for Nominating an Examiner from outside of the United Kingdom (if applicable)

You may nominate an examiner from overseas if you can give sufficient justification and if you nominate an experienced internal examiner. For more information please read the [Guidance on Research Degree Examiner Nominations document](https://www.ucl.ac.uk/academic-manual/sites/academic_manual/files/guidance_on_research_degree_examiner_nominations.pdf).

**Please provide justification for nominating a non-UK based examiner (i.e. lack of eligible UK-based alternatives):**

The thesis of the candidate is centred around the intersection of coalgebra, string diagrams and quantitative logic. While there are UK-based examiners who are experts in those topics in separation, there is a lack of people who have worked simultaneously in those fields. Prof. Bonchi, on the other hand, is an expert in all those fields and therefore would be a perfect person to examine the thesis of the candidate.

**What are your plans for managing the viva? (i.e. remote configuration, visa and travel costs):**

Prof. Bonchi is an Italian citizen and thus does not require a visa. He frequently visits the UK for academic purposes and the defence of the thesis will be aligned with one of his recurring visits. Because of this, there will be no need to cover any travel costs.

Section D: Supervisor’s Declaration

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| Part 1: Independence of the Nominated Examiners – if the answer is yes to either of the below, the examiners cannot be used. | |
| Have any of the nominated examiners been involved in the research reported in the candidate’s thesis? | Yes  No |
| Did any of the nominated examiners take part in the candidate’s upgrade panel from MPhil to PhD? | Yes  No  Not Applicable |

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| Part 2: Examiners and Candidate  Are you aware of any professional, academic or personal connections between **the examiner and the candidate?**   * You must not nominate any of the candidate’s current or former supervisors, or line managers as an examiner. * You must not nominate a partner/spouse, family member, or close family friend of the candidate. * The examiner must not have a personal or professional relationship with the candidate.   Yes  No |

If yes, please outline the details below (**Please note:** this should include clarification of whether connections are direct and on-going):

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| Part 3: Examiners and Supervisors  Are there any professional, academic or personal connections between **the examiners and any of the listed principal or subsidiary supervisors?** You must include clarification of whether connections between supervisors and examiners are direct, recent and/or on-going so it can be determined whether this constitutes a conflict of interest or not. |

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| Have there been any co-authored publications between supervisors and examiners? | Yes  No |
| If yes, please provide information: | **Prof. Silva collaborated with Prof. Bonchi, but the collaboration ended more than 5 years ago** |
| Have any of the supervisors’ held grants or joint funding with either examiner? | Yes  No |
| If yes, please provide information: |  |
| Have any of the supervisors co-supervised a student with either examiner? | Yes  No |
| If yes, please provide information, including dates on which co-supervision ended: |  |
| Does either examiner line-manage one of the supervisors/or is line-managed by one of the supervisors | Yes  No |
| If yes, please provide details: |  |

**Please note:** Connections between candidates and examiners, and supervisors and examiners are checked by Research Degrees against online databases, including UCL’s RPS database and publicly available websites. Any connections not disclosed and explained will delay/prevent approval, so it is better to disclose any possible connections in advance and include your justification at this stage.

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| Part 4: Supervisor’s Additional Information |
| If you wish to provide additional information in support of the choice of examiners, or any connections not covered above please outline here: |

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| Part 5: Supervisor’s Approval | |
| I confirm that I have read the [UCL guidance](https://www.ucl.ac.uk/academic-manual/sites/academic-manual/files/procedure_for_nomination_and_appointment_of_research_degree_examiners-2018-19_0.pdf) on the appointment of research degree examiners, and that this form has been completed in compliance with the guidance.  Where the examiner’s expenses claim exceeds £400 or the individual limits specified on the claim form, Student and Registry Services will reclaim the excess amount from the Department via IDT. | |
| Signature of supervisor: |  |
| Date: |  |

Section E: Departmental Approval

**Please note:** if the DGT is also one of the candidate’s supervisors or one of the nominated examiners, an alternative signatory must complete this section. This may be the Deputy DGT or Head of Department.

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| Part 1: Departmental Graduate Tutor Details | |
| Forename: |  |
| Surname: |  |
| Email: |  |

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| Part 2: Departmental Graduate Tutor Declarations |
| I confirm that the:   * principal supervisor has not appointed the nominated internal examiner for a research degree viva more than once in the past 12 months. * department has not appointed any of the nominated external examiner/s for a research degree viva in the past 12 months.   Yes  No (please provide details in Part 3 below) |
| Is either examiner the line-manager for any of the supervisors/ or are any of the supervisors the line-manager for either examiner?  Yes (please provide details in Part 3 below)  No |
| I approve of the above choice of examiners, and am satisfied that these nominations have been made in accordance with [UCL’s guidelines](https://www.ucl.ac.uk/academic-manual/sites/academic-manual/files/procedure_for_nomination_and_appointment_of_research_degree_examiners-2018-19_0.pdf) for the appointment of examiners:  Yes  No (please return form to supervisor to discuss) |

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| Part 3: Departmental Graduate Tutor’s Additional Information |
| If you wish to provide a supporting statement for the choice of examiners, or add additional details to any of the information declared in the form, please outline here: |

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| Part 4: Departmental Graduate Tutor Approval | |
| Please note: Where the examiner’s expenses claim exceeds £400 or the individual limits specified on the claim form, Student and Registry Services will reclaim the excess amount from the Department via IDT. | |
| Signature of DGT: |  |
| Date: |  |

**Once signed, please email this form to** [**Research Degrees**](mailto:researchdegrees@ucl.ac.uk) **for processing.**

# Section F: Faculty Approval

Please note: if the FGT is also one of the candidate’s supervisors (principal or subsidiary) or one of the nominated examiners, the Research Degrees team will pass this to an alternative signatory must complete this section. Please contact [Research Degrees](mailto:researchdegrees@ucl.ac.uk) if you are unsure how to proceed.

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| **Part 1: Faculty Graduate Tutor Details** | |
| Forename |  |
| Surname |  |

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| **Faculty Graduate Tutor Declaration** | | |
| I approve of the above choice of examiners, and am satisfied that these nominations have been made in accordance with UCL’s guidelines for the appointment of examiners: | | Yes  No |
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| **Faculty Graduate Tutor Comments** | | |
| If the nominations have not been approved, or you wish to add any further comments, please do so below: | | |
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| **Faculty Graduate Tutor Approval** | | |
| FGT’s Signature: |  | |
| Date: |  | |

Section H: UCL RDC Approval

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| **Declaration** | | |
| I approve of the above choice of examiners: | | Yes  No |
|  | |  |
| **Comments** | | |
| Please add any comments below: | | |
|  | | |
| **Approval** | | |
| RDC Chair / Nominee’s Signature: |  | |
| Date: |  | |

Revised: January 2024