360-Degree Survey

A Multiple-Perspective Survey on Doctoral Interdisciplinarity

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Contents

CHAPTER 1

Introduction to the Questionnaires

360° Opinions on Interdisciplinarity at Doctoral Level

Presence and Importance of Interdisciplinarity During PhD in Computer Science

The primary goal of this project is to compare the alignment of opinions on interdisciplinarity of different academic stakeholders (i.e., directive board of the faculty, professors, post-doctoral and doctoral students, external individuals). We focus in the field of Computer Science and the context of this analysis is the Faculty of Informatics of the Technische Universität Wien.

Participation is voluntary and responses will be **anonymous**. We will not identify who you are through the survey responses.

This survey is **very short**. It will not take you more than 5 minutes to complete it.

If you have any questions about this study, or want further information, please contact:
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Privacy

A note on privacy: This survey is anonymous. The record of your survey responses does not contain any identifying information about you, unless a specific survey question explicitly asked for it. If you used an identifying token to access this survey, please rest assured that this token will not be stored together with your responses. It is managed in a

separate database and will only be updated to indicate whether you did (or did not) complete this survey. There is no way of matching identification tokens with survey responses.

Participants' objectivity

This analysis makes no assumption that interdisciplinary research is better or more valuable than other types of research. Therefore, **we ask participants to provide their most objective answers.**

Definition of Interdisciplinarity

There is an extensive theology around the differences between inter- , trans- , multidisciplinary research, each with its own shade of meaning. For the purpose of this survey we adopt the term **'interdisciplinary research' to describe research where two or more disciplines work together.**

A more detailed definition is provided by Land (2011): 'Interdisciplinary research is a mode of research by teams or individuals that integrates information, data, techniques, tools, perspectives, concepts, and/or theories from two or more disciplines or bodies of specialized knowledge to advance fundamental understanding'.

Land, R. 2011. 'Crossing Tribal Boundaries: Interdisciplinarity as a Threshold Concept' in Becher, T., Trowler, P., Bamber, V. and Saunders, M. (eds) Academic Tribes and Territories: Intellectual Enquiry and the Culture of Disciplines. 3rd edition. Buckingham: Society for Research into Higher Education and Open University Press.

1. *** I have read and understood the introduction to this survey**
   Choose one of the following answers
   ☐ Yes

Questionnaire for Doctoral Students

Demographics

1. *** Are you a member of the Faculty of Informatics at TU Wien?**
   Choose one of the following answers
   ☐ Yes
   ☐ No, I am external to the Faculty of Informatics

2. *** How are you related to the Faculty of Informatics at TU Wien?**
   Choose one of the following answers
   ☐ Professor / doctoral supervisor
   ☐ Post-doc
   ☐ Doctoral student
   ☐ Other _____

3. *** What is your research field?**
   For info visit: `http://www.informatik.tuwien.ac.at/research`
   Check any that apply
   ☐ Computational Intelligence
   ☐ Media Informatics and Visual Computing
   ☐ Computer Engineering
   ☐ Distributed and Parallel Systems
   ☐ Business Informatics

☐ Other field different to Computer Science _____

4. * In which doctoral program are you enrolled?
Please select one answer
☐ Traditional doctoral program

☐ Vienna PhD School of Informatics

☐ Mathematical Logic in Computer Science

☐ Adaptive Distributed Systems

☐ Environmental Informatics

☐ Logical Methods in Computer Science (LogiCS)

☐ Cyber-Physical Production Systems

☐ Computational Perception

☐ Other _____

Antecedents

5. * Did you have previous experiences with discipline/s other than Computer Science before starting your PhD?
(E.g., as a hobby, as part of your studies, as part as your work)
Choose one of the following answers

Not at all   ☐—☐—☐—☐   To a large extent

6. * Did you wish to conduct interdisciplinary research before deciding on your PhD topic?
Choose one of the following answers

Not at all   ☐—☐—☐—☐   To a large extent

7. * Was the choice of your PhD topic motivated by its contribution to societal, human or environmental welfare?
Choose one of the following answers

Not at all   ☐—☐—☐—☐   To a large extent

Fulfillment Assessment

8. * How interdisciplinary is the research that you conduct?
Choose one of the following answers

Not interdisciplinary   ☐—☐—☐—☐   Very interdisciplinary

9. *** How interdisciplinary is the environment where you conduct your research?**
(Environment = research group for students at the faculty, company for those in industry, etc.)
Choose one of the following answers

Not interdisciplinary   □—□—□—□   Very interdisciplinary

10. *** Have you taken a broad range of university courses related to disciplines other than Computer Science?**
(E.g., courses on other disciplines, CS courses that integrate concepts or methods of other disciplines)
Choose one of the following answers

Not at all   □—□—□—□   To a large extent

11. *** Are you familiar with different research methodologies?**
(E.g., qualitative, quantitative, formal, experimental, etc.)
Choose one of the following answers

Not at all   □—□—□—□   To a large extent

12. *** Do you collaborate with experts in disciplines other than Computer Science?**
Choose one of the following answers

Not at all   □—□—□—□   To a large extent

13. *** Are your publications also contributing to disciplines other than Computer Science?**
Choose one of the following answers

Not at all   □—□—□—□   To a large extent

14. *** Is your research based on previous work of disciplines other than Computer Science?**
Choose one of the following answers

Not at all   □—□—□—□   To a large extent

15. *** In your opinion, is the nature of the financial resources that fund your PhD adequate to support interdisciplinary research?**
(E.g., The project in which you are employed, your scholarship, your own funds.)
Choose one of the following answers

Not at all   □—□—□—□   To a large extent

16. * Does your supervisor encourage that knowledge of more than one discipline is integrated into your research?
Choose one of the following answers

Not at all   □—□—□—□   To a large extent

17. * Do you receive additional academic supervision of an expert in a different discipline?
Choose one of the following answers

Not at all   □—□—□—□   To a large extent

Importance Assessment

18. * How important is it for you to conduct interdisciplinary research?
Choose one of the following answers

Not at all important   □—□—□—□   Very important

19. * How important is it for you to conduct research in an interdisciplinary environment?
(Environment = research group for students at the faculty, company for those in industry, etc.)
Choose one of the following answers

Not at all important   □—□—□—□   Very important

20. * How important is it for you to take broad range of courses related to disciplines other than Computer Science?
(E.g., courses on other disciplines, CS courses that integrate concepts or methods of other disciplines)
Choose one of the following answers

Not at all important   □—□—□—□   Very important

21. * How important is it for you to be familiar with different research methodologies?
(E.g., qualitative, quantitative, formal, experimental, etc.)
Choose one of the following answers

Not at all important   □—□—□—□   Very important

22. * How important is it for you to collaborate with experts in disciplines other than Computer Science?
Choose one of the following answers

Not at all important   □—□—□—□   Very important

23. * How important is it for you to publish publications that also contribute to disciplines other than Computer Science?
Choose one of the following answers

Not at all important   □—□—□—□   Very important

24. * How important is it for you to base your research on previous work of disciplines other than Computer Science?
Choose one of the following answers

Not at all important   □—□—□—□   Very important

25. * How important is for you the availability of funds for interdisciplinary research?
Choose one of the following answers

Not at all important   □—□—□—□   Very important

26. * How important is it for you to receive encouragement to conduct research that involves knowledge of more than one discipline?
Choose one of the following answers

Not at all important   □—□—□—□   Very important

27. * How important is it for you to receive additional supervision of an expert in a different discipline?
Choose one of the following answers

Not at all important   □—□—□—□   Very important

Questionnaire for Post-Doctoral Researchers

Demographics

1. *** Are you a member of the Faculty of Informatics at TU Wien?**
   Choose one of the following answers
   ☐ Yes
   ☐ No, I am external to the Faculty of Informatics

2. *** How are you related to the Faculty of Informatics at TU Wien?**
   Choose one of the following answers
   ☐ Professor / doctoral supervisor
   ☐ Post-doc
   ☐ Doctoral student
   ☐ Other _____

3. *** What is your research field?**
   For info visit: http://www.informatik.tuwien.ac.at/research
   Check any that apply
   ☐ Computational Intelligence
   ☐ Media Informatics and Visual Computing
   ☐ Computer Engineering
   ☐ Distributed and Parallel Systems
   ☐ Business Informatics
   ☐ Other field different to Computer Science _____

Fulfillment Assessment

4. *** How interdisciplinary is the research conducted by the doctoral students of your research group?**
   Choose one of the following answers

   Not interdisciplinary   □—□—□—□   Very interdisciplinary

5. *** How interdisciplinary is the environment where doctoral students of your group conduct their research?**
   (Environment = research group for students at the faculty, company for those in industry, etc.)
   Choose one of the following answers

   Not interdisciplinary   □—□—□—□   Very interdisciplinary

6. *** To what extent do doctoral students of your group collaborate with experts in disciplines other than Computer Science?**
   Choose one of the following answers

   Not at all   □—□—□—□   To a large extent

7. *** To what extent do the publications of doctoral students of your group also contribute to disciplines other than Computer Science?**
   Choose one of the following answers

   Not at all   □—□—□—□   To a large extent

8. *** To what extent do doctoral students of your group base their research on previous work of disciplines other than Computer Science?**
   Choose one of the following answers

   Not at all   □—□—□—□   To a large extent

Importance Assessment

In your opinion, ...

9. *** ... how important is it that doctoral students of your group conduct interdisciplinary research?**
   Choose one of the following answers

   Not at all important   □—□—□—□   Very important

10. *** ...   how important is it that the doctoral students of your group conduct their research in an interdisciplinary environment?**

(Environment = research group for students at the faculty, company for those in industry, etc.)
Choose one of the following answers

Not at all important   □—□—□—□   Very important

11. *** ... how important is it that doctoral students of your group take a broad range of courses related to disciplines other than Computer Science?**
(E.g., courses on other disciplines, CS courses that integrate concepts or methods of other disciplines)
Choose one of the following answers

Not at all important   □—□—□—□   Very important

12. *** ... how important is it that doctoral students of your group are familiar with different research methodologies?**
(E.g., qualitative, quantitative, formal, experimental, etc.)
Choose one of the following answers

Not at all important   □—□—□—□   Very important

13. *** ... how important is it that doctoral students of your group collaborate with experts in disciplines other than Computer Science?**
Choose one of the following answers

Not at all important   □—□—□—□   Very important

14. *** ... how important is it that the research of doctoral students of your group is also contributing to disciplines other than Computer Science?**
Choose one of the following answers

Not at all important   □—□—□—□   Very important

15. *** ... how important is it that doctoral students of your group base their research on previous work of disciplines other than Computer Science?**
Choose one of the following answers

Not at all important   □—□—□—□   Very important

16. *** ... how important are funds for interdisciplinary research for doctoral students of your group?**
Choose one of the following answers

Not at all important   □—□—□—□   Very important

17. *** ... how important is it that doctoral students of your group are encouraged by their supervisors to conduct research that involves knowledge**

of more than one discipline?
Choose one of the following answers

Not at all important   □—□—□—□   Very important

18. *** ... how important is it that doctoral students of your group receive additional supervision of an expert in a different discipline?**
Choose one of the following answers

Not at all important   □—□—□—□   Very important

Questionnaire for Faculty Members

Demographics

1. *** Are you a member of the Faculty of Informatics at TU Wien?**
   Choose one of the following answers
   - ☐ Yes
   - ☐ No, I am external to the Faculty of Informatics

2. *** How are you related to the Faculty of Informatics at TU Wien?**
   Choose one of the following answers
   - ☐ Professor / doctoral supervisor
   - ☐ Post-doc
   - ☐ Doctoral student
   - ☐ Other _____

3. *** Are you a member of the directive board of the Faculty of Informatics at the TU Wien?**
   Choose one of the following answers
   - ☐ Yes
   - ☐ No

4. *** Are you directing any of doctoral programs of the Faculty of Informatics at the TU Wien?**
   Choose one of the following answers

☐ Yes

☐ No

5. *** What is your research field?**
For info visit: http://www.informatik.tuwien.ac.at/research
Check any that apply

☐ Computational Intelligence

☐ Media Informatics and Visual Computing

☐ Computer Engineering

☐ Distributed and Parallel Systems

☐ Business Informatics

☐ Other field different to Computer Science ⎯⎯⎯⎯⎯⎯⎯

Fullfillment Assessment

6. *** How interdisciplinary is the research conducted by your doctoral students?**
Choose one of the following answers

Not interdisciplinary   ☐—☐—☐—☐   Very interdisciplinary

7. *** How interdisciplinary is the environment where your doctoral students conduct their research?**
(Environment = research group for students at the faculty, company for those in industry, etc.)
Choose one of the following answers

Not interdisciplinary   ☐—☐—☐—☐   Very interdisciplinary

8. *** To what extent do your doctoral students take a broad range of courses related to disciplines other than Computer Science?**
(E.g., courses on other disciplines, CS courses that integrate concepts or methods of other disciplines)
Choose one of the following answers

Not at all   ☐—☐—☐—☐   To a large extent

9. *** To what extent are your doctoral students familiar with different research methodologies?**
(E.g., qualitative, quantitative, formal, experimental, etc.)
Choose one of the following answers

Not at all   ☐—☐—☐—☐   To a large extent

10. *** To what extent do your doctoral students collaborate with experts in disciplines other than Computer Science?**
   Choose one of the following answers

   Not at all   □—□—□—□   To a large extent

11. *** To what extent are the publications of your doctoral students also contributing to disciplines other than Computer Science?**
   Choose one of the following answers

   Not at all   □—□—□—□   To a large extent

12. *** To what extent is the research of your doctoral students based on previous work of disciplines other than Computer Science?**
   Choose one of the following answers

   Not at all   □—□—□—□   To a large extent

13. *** To what extent is the nature of the funding of your doctoral students appropriate to support interdisciplinary research?**
   Choose one of the following answers

   Not at all   □—□—□—□   To a large extent

14. *** To what extent do you encourage your doctoral students to conduct research that involves knowledge of more than one discipline?**
   Choose one of the following answers

   Not at all   □—□—□—□   To a large extent

15. *** To what extent do your doctoral students receive additional academic supervision of an expert in a different discipline?**
   Choose one of the following answers

   Not at all   □—□—□—□   To a large extent

Importance Assessment

In your opinion, ...

16. *** ... how important is it that your doctoral students conduct interdisciplinary research?**
   Choose one of the following answers

   Not at all important   □—□—□—□   Very important

17. *** ... how important is it that your students conduct their research in an interdisciplinary environment?**

(Environment = research group for students at the faculty, company for those in industry, etc.)
Choose one of the following answers

Not at all important   □—□—□—□   Very important

18. * ... how important is it that your students take a broad range of courses related to disciplines other than Computer Science?
(E.g., courses on other disciplines, CS courses that integrate concepts or methods of other disciplines)
Choose one of the following answers

Not at all important   □—□—□—□   Very important

19. * ... how important is it that your students are familiar with different research methodologies?
(E.g., qualitative, quantitative, formal, experimental, etc.)
Choose one of the following answers

Not at all important   □—□—□—□   Very important

20. * ... how important is it that your students collaborate with experts in disciplines other than Computer Science?
Choose one of the following answers

Not at all important   □—□—□—□   Very important

21. * ... how important is it that the publications of your doctoral students are also contributing to disciplines other than Computer Science?
Choose one of the following answers

Not at all important   □—□—□—□   Very important

22. * ... how important is it that the research of your doctoral students is based on previous research of disciplines other than Computer Science?
Choose one of the following answers

Not at all important   □—□—□—□   Very important

23. * ... how important are funds for interdisciplinary research for your students?
Choose one of the following answers

Not at all important   □—□—□—□   Very important

24. * ... how important is it that students are encouraged to conduct research that involves knowledge of more than one discipline?

Choose one of the following answers

Not at all important   □—□—□—□   Very important

25. *** ... how important is it that your doctoral students receive additional supervision of an expert in a different discipline?**
Choose one of the following answers

Not at all important   □—□—□—□   Very important

Questionnaire for Members of the Directive Board

Demographics

1. *** Are you a member of the Faculty of Informatics at TU Wien?**
   Choose one of the following answers
   - ☐ Yes
   - ☐ No, I am external to the Faculty of Informatics

2. *** How are you related to the Faculty of Informatics at TU Wien?**
   Choose one of the following answers
   - ☐ Professor / doctoral supervisor
   - ☐ Post-doc
   - ☐ Doctoral student
   - ☐ Other _____

3. *** Are you a member of the directive board of the Faculty of Informatics at the TU Wien?**
   Choose one of the following answers
   - ☐ Yes
   - ☐ No

4. *** Are you directing any of doctoral programs of the Faculty of Informatics at the TU Wien?**
   Choose one of the following answers

☐ Yes

☐ No

5. * What is your research field?
For info visit: http://www.informatik.tuwien.ac.at/research
Check any that apply

☐ Computational Intelligence

☐ Media Informatics and Visual Computing

☐ Computer Engineering

☐ Distributed and Parallel Systems

☐ Business Informatics

☐ Other field different to Computer Science _____

Fulfillment Assessment

6. * How interdisciplinary is the research conducted by doctoral students of the faculty?
Choose one of the following answers

Not interdisciplinary   ☐—☐—☐—☐   Very interdisciplinary

7. * How interdisciplinary is the environment where doctoral students of the faculty conduct their research?
(Environment = research group for students at the faculty, company for those in industry, etc.)
Choose one of the following answers

Not interdisciplinary   ☐—☐—☐—☐   Very interdisciplinary

8. * To what extent do doctoral students of the faculty take a broad range of courses related to disciplines other than Computer Science?
(E.g., courses on other disciplines, CS courses that integrate concepts or methods of other disciplines)
Choose one of the following answers

Not at all   ☐—☐—☐—☐   To a large extent

9. * To what extent are doctoral students of the faculty familiar with different research methodologies?
(E.g., qualitative, quantitative, formal, experimental, etc.)
Choose one of the following answers

Not at all   ☐—☐—☐—☐   To a large extent

10. *** To what extent do doctoral students of the faculty collaborate with experts in disciplines other than Computer Science?**
   Choose one of the following answers

   Not at all □—□—□—□ To a large extent

11. *** To what extent are the publications of doctoral students of the faculty also contributing to disciplines other than Computer Science?**
   Choose one of the following answers

   Not at all □—□—□—□ To a large extent

12. *** To what extent is the research of doctoral students of the faculty based on previous work of disciplines other than Computer Science?**
   Choose one of the following answers

   Not at all □—□—□—□ To a large extent

13. *** To what extent is the nature of the funding of doctoral students of the faculty appropriate to support interdisciplinary research?**
   Choose one of the following answers

   Not at all □—□—□—□ To a large extent

14. *** To what extent are doctoral students of the faculty encouraged by their supervisors to conduct research that involves knowledge of more than one discipline?**
   Choose one of the following answers

   Not at all □—□—□—□ To a large extent

15. *** To what extent do doctoral students of the faculty receive additional academic supervision of an expert in a different discipline?**
   Choose one of the following answers

   Not at all □—□—□—□ To a large extent

Importance Assessment

In your opinion, ...

16. *** ... how important is it that doctoral students of the faculty conduct interdisciplinary research?**
   Choose one of the following answers

   Not at all important □—□—□—□ Very important

17. * ... how important is it that doctoral students of the faculty conduct their research in an interdisciplinary environment?
(Environment = research group for students at the faculty, company for those in industry, etc.)
Choose one of the following answers

Not at all important   □—□—□—□   Very important

18. * ... how important is it that doctoral students of the faculty take a broad range of courses related to disciplines other than Computer Science?
(E.g., courses on other disciplines, CS courses that integrate concepts or methods of other disciplines)
Choose one of the following answers

Not at all important   □—□—□—□   Very important

19. * ... how important is it that doctoral students of the faculty are familiar with different research methodologies?
(E.g., qualitative, quantitative, formal, experimental, etc.)
Choose one of the following answers

Not at all important   □—□—□—□   Very important

20. * ... how important is it that doctoral students of the faculty collaborate with experts in disciplines other than Computer Science?
Choose one of the following answers

Not at all important   □—□—□—□   Very important

21. * ... how important is it that the publications of doctoral students of the faculty are also contributing to disciplines other than Computer Science?
Choose one of the following answers

Not at all important   □—□—□—□   Very important

22. * ... how important is it that the research of doctoral students of the faculty is based on previous research of disciplines other than Computer Science?
Choose one of the following answers

Not at all important   □—□—□—□   Very important

23. * ... how important are funds for interdisciplinary research for doctoral students of the faculty?
Choose one of the following answers

Not at all important   □—□—□—□   Very important

24. *** ... how important is it that doctoral students of the faculty are encouraged by their supervisors to conduct research that involves knowledge of more than one discipline?**
Choose one of the following answers

Not at all important   □—□—□—□   Very important

25. *** ... how important is it that doctoral students of the faculty receive additional supervision of an expert in a different discipline?**
Choose one of the following answers

Not at all important   □—□—□—□   Very important

Questionnaire for External Individuals

Demographics

1. *** Are you a member of the Faculty of Informatics at TU Wien?**
   Choose one of the following answers

   ☐ Yes

   ☐ No, I am external to the Faculty of Informatics

2. *** Select what best describes you.**
   Check any that apply

   ☐ Visiting professor at the Faculty of Informatics of the TU Wien.

   ☐ Member of a research funding agency.

   ☐ Member of the TU Wien (external to the Faculty of Informatics).

   ☐ Other _____

Note for Research Funding Agencies

3. *** Please answer the following questions having in mind the funding and research policies of your institution. Your answers should represent the perspective of your institution.**
   Choose one of the following answers

   ☐ Continue

Importance Assessment

In your opinion, ...

4. *** ... how important is it that doctoral students in the field of Computer Science conduct interdisciplinary research?**
   Choose one of the following answers

   Not at all important   □—□—□—□   Very important

5. *** ... how important is it that doctoral students in the field of Computer Science conduct their research in an interdisciplinary environment?**
   (Environment = research group for students at the faculty, company for those in industry, etc.)
   Choose one of the following answers

   Not at all important   □—□—□—□   Very important

6. *** ... how important is it that doctoral students in the field of Computer Science take a broad range of courses related to disciplines other than Computer Science?**
   (E.g., courses on other disciplines, CS courses that integrate concepts or methods of other disciplines)
   Choose one of the following answers

   Not at all important   □—□—□—□   Very important

7. *** ... how important is it that doctoral students in the field of Computer Science are familiar with different research methodologies?**
   (E.g., qualitative, quantitative, formal, experimental, etc.)
   Choose one of the following answers

   Not at all important   □—□—□—□   Very important

8. *** ... how important is it that doctoral students in the field of Computer Science collaborate with experts in disciplines other than Computer Science?**
   Choose one of the following answers

   Not at all important   □—□—□—□   Very important

9. *** ... how important is it that the research of doctoral students in the field of Computer Science is also contributing to disciplines other than Computer Science?**
   Choose one of the following answers

   Not at all important   □—□—□—□   Very important

10. * ... how important is it that doctoral students in the field of Computer Science base their research on previous work of disciplines other than Computer Science?
Choose one of the following answers

Not at all important   □—□—□—□   Very important

11. * ... how important are funds for interdisciplinary research for doctoral students in the field of Computer Science?
Choose one of the following answers

Not at all important   □—□—□—□   Very important

12. * ... how important is it that doctoral students in the field of Computer Science are encouraged by their supervisors to conduct research that involves knowledge of more than one discipline?
Choose one of the following answers

Not at all important   □—□—□—□   Very important

13. * ... how important is it that doctoral students in the field of Computer Science receive additional supervision of an expert in a different discipline?
Choose one of the following answers

Not at all important   □—□—□—□   Very important

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Land, R. (2011). Crossing tribal boundaries: Interdisciplinarity as a threshold concept. In Becher, T., Trowler, P., Bamber, V., and Saunders, M., editors, *Academic Tribes and Territories: Intellectual Enquiry and the Culture of Disciplines*. Buckingham: Society for Research into Higher Education and Open University Press, 3rd edition.