

360-Degree Survey

A Multiple-Perspective Survey on Doctoral Interdisciplinarity

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Vienna, 10th December, 2015

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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: María del Carmen Calatrava Moreno

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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-, multi-disciplinary 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

L.	* Are you a member of the Faculty of Informatics at TU Wien?
	Choose one of the following answers
	□ Yes
	\square 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
	$\hfill\Box$ Media Informatics and Visual Computing
	☐ Computer Engineering
	☐ Distributed and Parallel Systems
	☐ Business Informatics

2.	QUESTION	NNAIRE FOR DOCTORAL STUDENTS
		□ 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
	Ant	secedents
	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 \square — \square — \square 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 \square — \square — \square 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 \square — \square — \square To a large extent
	Fulf	fillment Assessment
	8.	* How interdisciplinary is the research that you conduct? Choose one of the following answers
		Not interdisciplinary $\square - \square - \square - \square$ 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 \square — \square — \square 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 \square — \square — \square 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 \square — \square — \square 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 \square — \square — \square 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 \square — \square — \square 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 \square — \square — \square 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 \square — \square — \square 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 \square — \square — \square 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 \square — \square — \square To a large extent
Imp	ortance Assessment
18.	* How important is it for you to conduct interdisciplinary research? Choose one of the following answers
	Not at all important \square — \square — \square Very important
	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 \square — \square — \square 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 \square — \square — \square 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 \square — \square — \square 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 \square — \square — \square Very important

23.	* How important is tribute to discipline Choose one of the following the control of the following the control of the control o	es other than Co	publish publications that also con- omputer Science?
	Not at all important		Very important
24.	* How important is of disciplines other Choose one of the follo	than Computer	ase your research on previous work Science?
	Not at all important		Very important
25.	* How important is research? Choose one of the following the state of the following the state of	-	ability of funds for interdisciplinary
	Not at all important		Very important
26.	=	ves knowledge o	receive encouragement to conduct more than one discipline?
	Not at all important		Very important
27.	* How important i expert in a different Choose one of the follows:	t discipline?	eceive additional supervision of an
	Not at all important		Very important

Questionnaire for Post-Doctoral Researchers

1.	* Are you a member of the Faculty of Informatics at TU Wien? Choose one of the following answers U Yes
	\square 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 $\square - \square - \square - \square$ 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 $\square - \square - \square - \square$ 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 \square — \square — \square 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 \square — \square — \square 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 \square — \square — \square To a large extent
Imp	ortance Assessment
In you	ur 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 \square — \square — \square 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 of industry, etc.) Choose one of the following answers	nt the faculty, company for those in
	Not at all important \square — \square — \square Very	important
11.	1. * how important is it that doctors a broad range of courses related to dis Science?	sciplines other than Computer
	(E.g., courses on other disciplines, CS courses of other disciplines) Choose one of the following answers	s that integrate concepts or methods
	Not at all important \square — \square — \square Very	important
12.	2. * how important is it that doctor familiar with different research method (E.g., qualitative, quantitative, formal, experience Choose one of the following answers	ologies?
	Not at all important \square — \square — \square Very	important
13.	3. * how important is it that doctoral strate with experts in disciplines other the Choose one of the following answers	, , ,
	Not at all important \square — \square — \square Very	important
14.	4. * how important is it that the resear group is also contributing to disciplines Choose one of the following answers	•
	Not at all important \square — \square — \square Very	important
15.	5. * how important is it that doctoral st research on previous work of disciplines Choose one of the following answers	
	Not at all important \square — \square — \square Very	important
16.	6. * how important are funds for interdistudents of your group? Choose one of the following answers	sciplinary research for doctoral
	Not at all important $\square - \square - \square - \square$ Very	important
17.	7. * how important is it that doctoral stuaged by their supervisors to conduct re	

3. QUESTIONNAIRE FOR POST-DOCTORAL RESEARCHERS

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 receadditional supervision of an expert in a different discipline? Choose one of the following answers			, , ,
	Not at all important		Very important

Questionnaire for Faculty Members

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

4.	QUESTIONNAIRE FOR FACULTY MEMBERS
	□ Yes
	\square 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 $\square - \square - \square - \square$ 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 $\square - \square - \square - \square$ 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 \square — \square — \square 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 \square — \square — \square To a large extent

10.	in discipli	t extent do yo nes other than of the following	Computer	al students collaborate with experts r Science?	
	Not at all		To a large	e extent	
11.	contributi		es other th	tions of your doctoral students also nan Computer Science?	
	Not at all		To a large	e extent	
12.	previous v		nes other	of your doctoral students based on than Computer Science?	
	Not at all		To a large	e extent	
13.	appropria		${f nterdiscipl}$	he funding of your doctoral students linary research?	
	Not at all		To a large	e extent	
14.	research t	-	$\mathbf{nowledge}$ o	e your doctoral students to conduct of more than one discipline?	
	Not at all		To a large	e extent	
15.	supervisio	•	in a differ	students receive additional academic rent discipline?	
	Not at all		To a large	e extent	
Imp	ortance	Assessment	-		
In you	ar opinion,				
16.	ciplinary i	_	-	doctoral students conduct interdis-	
	Not at all i	mportant \square —[Very important	
17.		important is it sciplinary envi	•	r students conduct their research in	

	(Environment = resear industry, etc.) Choose one of the follo		ents at the faculty, company for those in
	Not at all important		Very important
18.	courses related to d	isciplines other disciplines, CS co	ur students take a broad range of than Computer Science? ourses that integrate concepts or methods
	Not at all important		Very important
19.	* how important research methodolog (E.g., qualitative, quan Choose one of the follows)	gies? titative, formal, e	students are familiar with different experimental, etc.)
	Not at all important		Very important
20.	* how important disciplines other that Choose one of the follows:	an Computer So	tudents collaborate with experts in ience?
	Not at all important		Very important
21.		g to disciplines	blications of your doctoral students other than Computer Science?
21.	are also contributing	g to disciplines wing answers	
	are also contributing Choose one of the followard all important * how important	g to disciplines owing answers ————— is it that the research of discip	other than Computer Science?
	are also contributing Choose one of the follow Not at all important * how important based on previous re-	g to disciplines owing answers ————— is it that the research of discip	other than Computer Science? Very important esearch of your doctoral students is
22.	are also contributing Choose one of the follow Not at all important * how important based on previous re Choose one of the follow Not at all important	g to disciplines owing answers is it that the research of discipowing answers t are funds for	Very important esearch of your doctoral students is lines other than Computer Science?

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 supervision of an e Choose one of the foll	xpert in a differ		s receive additional
	Not at all important		Very important	

Questionnaire for Members of the Directive Board

1.	* Are you a member of the Faculty of Informatics at TU Wien? Choose one of the following answers
	☐ Yes
	\square 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 Infor-
	matics at the TU Wien?
	Choose one of the following answers

5. Quest	TIONNAIRE FOR MEMBERS OF THE DIRECTIVE BOARD
	\square Yes
	\square 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
${f F}$	ulfillment Assessment
	6. * How interdisciplinary is the research conducted by doctoral students of the faculty? Choose one of the following answers
	Not interdisciplinary $\square \square \square \square \square \square \square \square \square$ 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 $\square \square \square \square \square \square \square \square \square$ 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 \square — \square — \square 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 \square — \square — \square To a large extent

exp	erts in		s oth	toral students of the faculty collaborate with er than Computer Science?
Not	at all		—	To a large extent
also	contr		discij	publications of doctoral students of the faculty plines other than Computer Science?
Not	at all			To a large extent
base	ed on p		ork o	research of doctoral students of the faculty of disciplines other than Computer Science?
Not	at all		—	To a large extent
the	facult		ate to	nature of the funding of doctoral students of support interdisciplinary research?
Not	at all		—	To a large extent
$rac{ ext{the}}{ ext{tha}}$	ir supe n one (cond	ctoral students of the faculty encouraged by uct research that involves knowledge of more
Not	at all		—	To a large extent
aca	\mathbf{demic}		n of a	oral students of the faculty receive additional an expert in a different discipline?
Not	at all		—	To a large extent
Import	ance	Assessm	ent	
In your op	inion, .			
inte	erdiscip	important plinary rese	earch	
Not	at all i	mportant		l—□—□ 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 \square — \square — \square 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 \square — \square — \square 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 $\square \square \square \square \square \square \square \square \square$ 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 \square — \square — \square 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 $\square - \square - \square - \square$ 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 \square — \square — \square Very important
23.	* how important are funds for interdisciplinary research for doctoral

students of the faculty?

	Not at all important $\square \square \square \square \square \square \square \square$ 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 $\square - \square - \square - \square$ Very important			
2 5.	* 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 ———————————————————————————————————			

Questionnaire for External Individuals

1.	* Are you a member of the Faculty of Informatics at TU Wien? Choose one of the following answers		
	□ Yes		
	\square No, I am external to the Faculty of Informatics		
2.	* Select what best describes you. Check any that apply		
	\Box Visiting professor at the Faculty of Informatics of the TU Wien.		
	\square Member of a research funding agency.		
	\Box Member of the TU Wien (external to the Faculty of Informatics).		
	□ Other		
Not	e 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

Computer Science?

Choose one of the following answers

Not at all important $\square - \square - \square$

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 $\square - \square - \square$ 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 $\square - \square - \square$ 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 $\square - \square - \square$ 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 $\square - \square - \square$ 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

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 \square — \square — \square 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 $\square - \square - \square - \square$ Very important					
12.	2. * 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 $\square - \square - \square - \square$ 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 \square — \square — \square Very important					

Bibliography

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