A COMPUTER SCIENCE PhD RESEARCH PROPOSAL TEMPLATE

For German Doctoral Applications (Promotion-Ready)

Important Note: This template is a general guide for Computer Science PhD proposals (Exposés) for German doctoral applications. Requirements differ by faculty and supervisor, so check your Promotionsordnung first.

Research Title: [Insert a concise, specific research title]
Applicant: [Full name]
Proposed Research Area: Computer Science
Prospective Supervisor / Research Group: [Name or group]
University / Faculty: [German university and faculty]
Doctoral Route: [Individual / Structured programme]
Doctoral Degree: [Dr. rer. nat. / Dr.-Ing.]
Submission Date: [Date]

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Before You Write: German Requirements to Check

Confirm each item with your target faculty before you finalise the proposal.

Item	What it means	Where it applies	Source
Exposé	A short outline of your project sent to a supervisor or faculty.	Whole template.	DAAD
Promotionsordnung	The faculty's doctoral regulations, including admission and degree title.	Check first.	DAAD Wissenschaftsrat (PDF)
Acceptance as a doctoral candidate	Formal admission by the faculty, usually needing a supervisor's written commitment and your Exposé.	Section 2.	Wissenschaftsrat (PDF) DAAD
Individual vs structured doctorate	Individual: one supervisor. Structured: a graduate school with a curriculum.	Front page.	DFG DAAD
Supervision agreement	A written agreement on topic, meetings and milestones.	Sections 8 and 9.	Wissenschaftsrat (PDF)
Dr. rer. nat. vs Dr.-Ing.	The faculty sets the degree title.	Front page.	DAAD
GDPR	Applies when you process personal data.	Sections 6 and 10.	GDPR (EUR-Lex)
Ethikkommission	Work with people or sensitive data often needs committee approval first.	Sections 6 and 10.	DFG

How to use this template: Replace the grey placeholders with your own text. Lengths suit an 8 to 12 page proposal, so scale them down if your faculty sets a lower limit.

1. Abstract

What it is for: A quick summary for the supervisor.
Length: 150 to 250 words.
Example: This project investigates how federated learning keeps its accuracy when client data is highly uneven.
This project investigates [research problem] in [subfield]. Existing approaches are limited by [limitation]. The study aims to [aim] by [approach]. The expected contribution is [contribution].

2. Introduction and Research Context

What it is for: Places the problem in its field.
Length: 400 to 600 words.
Example: Large language models are now used in code review, yet their reliability on security flaws is unclear.
Research in [subfield] has advanced through [methods]. Challenges remain in [issue]. This proposal focuses on [narrow topic] and connects to [research group] at [German university].

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3. Problem Statement and Objectives
What it is for: States the one problem and its objectives.
Length: 250 to 400 words.
Example: Industrial anomaly detectors lose accuracy when data drifts, so the aim is a detector that adapts without retraining.
Despite progress in [approach], [problem] remains unsolved because of [limitation]. The aim is to [aim]. The objectives are to [review methods], [identify a gap], [design a solution], and [evaluate it].

4. Research Questions
What it is for: Turns the problem into answerable questions.
Length: 150 to 250 words.
Example: RQ1: How much does adaptive re-weighting improve recall under drift compared with periodic retraining?
The main question is: [question]. Supporting questions ask how [method] affects [outcome].

5. Literature Review and Research Gap
What it is for: Shows what is known and why your project is new.
Length: 800 to 1,200 words.
Example: Most reviewed detectors assume labelled drift points, which deployed systems rarely provide.
This review covers [themes]. Existing work agrees on [knowledge] but differs on [issue]. The gap is [gap, with citations]. This study differs from [prior work] by [difference].

6. Research Methodology
What it is for: Explains how you will answer each question.
Length: 800 to 1,200 words.
Example: Each detector will be tested on three public benchmarks against two baselines over ten random seeds.
The project uses a [theoretical, experimental, empirical or mixed] design with [datasets or tools]. Evaluation compares [baselines] using [metrics]. Limitations will be reported in full.

7. Proposed Work and Expected Contribution
What it is for: Describes the work packages and what the thesis will add.
Length: 300 to 500 words.
Example: The expected contribution is an open-source drift-adaptive detector and a benchmark of long-running streams.
The work packages cover [literature analysis], [method design], [evaluation] and [thesis writing]. The expected contribution is [algorithm, system, dataset or insight].

8. Feasibility, Resources, and Risk
What it is for: Shows the project can be finished with your resources.
Length: 200 to 300 words.
Example: Training needs about 400 GPU hours, which the group's cluster can provide.
The project is feasible because [reason]. Required resources are [hardware, software or data]. The main risk is [risk], reduced through [mitigation].

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9. Timeline
What it is for: Gives an indicative plan. German doctorates often take three to four years.
Length: Half a page or one table.
Example: Months 13 to 24: run experiments and write the first paper.

Period	Activity
[Months 1 to 6]	[Literature review and refined questions.]
[Months 7 to 12]	[Method design and early development.]
[Months 13 to 24]	[Implementation, experiments and evaluation.]
[Months 25 to 30]	[Analysis and refinement.]
[Months 31 to 36]	[Thesis writing and submission.]

10. Ethics, Data Protection, and Conclusion
What it is for: Shows careful handling of people and data, then closes the proposal.
Length: 200 to 300 words.
Example: User-study data will be collected only after ethics approval and anonymised before analysis.
The project will follow [university] research-integrity rules. Where [personal data] are involved, approval from [ethics committee] will come first and data will be handled under the GDPR. In conclusion, this proposal addresses [problem] through [approach].

11. References
What it is for: Lets the reader check your sources.
Length: One entry per cited source.
Example: Kingma, D. P., & Ba, J. (2015). Adam: A method for stochastic optimization. ICLR.
List [author, year, title, venue and DOI] for each source.

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