

# RCSE Research Project - Registration Form

Summer semester 2024

## Your personal data

Name	Surname	Mat.-No.
Vishnu Raj	Cherukudi Mattuvayil	65429

## Selected Topics

Please **select 5 topics** from the topics catalog in Moodle:

<https://moodle.tu-ilmenau.de/mod/data/view.php?id=46264>

and enter the IDs of your 5 favorite topics in the following table<sup>(1)</sup>.

Priority:	high	medium-high	medium	medium-low	low
Topic ID:	S4_DBIS1	S4_SSE4			

*Further topics with least Priority:*

Notes concerning the selection of topics and the assignment process:

- We will try to assign you a topic according your priority, starting from high to low. In case none of the selected topics is available, we will assign you any open topic from the catalog.
- Students attempting the research project on schedule, i.e., being in the 3<sup>rd</sup> RCSE semester, will have a higher priority in topic assignment while others follow.
- Since the degree of detail per topic description differs substantially and may not be sufficient for your topic selection, please get in **contact with the respective supervisor** of a topic in question to get more information.
- You may attach a **motivation letter** regarding your favorite topic(s) accompanying this PDF registration (1 page per topic). If you opt for this letter, you should describe knowledge and skills that enable you to successfully work on the respective topic as well as give a brief description of the task and potential solutions as you understand it. This letter will be considered in the topic assignment process.
- Your eventual topic assignment will be published in the Moodle course.

## Important information concerning the research project

Please take care to **meet all deadlines** defined in the research project's Moodle course. At this stage, you must upload this signed PDF file on time. In the next stages, you will need to provide an exposé of the assigned topic or if you are not satisfied with your assigned topic sign-off from the exam. If an exposé is not submitted on time, this will **automatically result in deregistration**. Same holds for the case, that the exposé is not accepted by your supervisor. After submitting the exposé successfully, it is **no longer possible to deregister by yourself**.

In subsequent stages, you will need to upload your final report and your slides on time. Missing any of these course deadlines will have strict consequences, usually you will fail the course.

*With my signature I register for the Research Project in summer semester 2024.*

*I am aware that I hereby register for the respective exam.*



.....  
Your signature

(1) Example for a selection of topics. The most wanted is ABC3.

Priority:	high	medium-high	medium	medium-low	low
Topic ID:	ABC3	QRST4	ABC1	LMN4	MNO7

Dear Dr. Marcus Paradies,

I am writing to express my strong interest in pursuing the Research Project focused on the topic **In-Browser Raster Data Processing**. The idea of processing data directly in the browser with WebAssembly looks interesting which if done properly will execute with near-native speed and overcome the limitations of Javascript based approaches for performing data analysis directly in the web browsers.

I am committed to dedicating myself fully to the success of this project. I am confident that my background in computer science, and my previous work experience as a software engineer working with databases and web development will be of use to this project for its completion.

I have experience working with:

- Programming languages such as C#, Python, Javascript, and Go, with a focus on frameworks like ASP.NET, NodeJS and ReactJS.
- Database management through SQL and NoSQL databases, understanding the intricacies of data modeling, indexing, and query optimization.
- ML model development with python using packages such as Keras, Numpy, Pandas and Tensorflow

The tasks to complete as far as I understand for this projects are to:

- Implement a raster data processing library of selected operations using WebAssembly(using libraries like duckdb-wasm).
- Implement a data loader from a storage service (e.g. S3) for the above operation into the browser.
- Also maybe implement the operations using Javascript for later comparison.
- Evaluate and compare the performance of the implemented functions

Thank you for considering my application. I am excited about the opportunity to work on this project, and I look forward to the possibility of working with you.

Sincerely,  
Vishnu Raj Cherukudi Mattuvayil