

# Project Group Presentation

## Winter Semester 2026/27

Computer Science & Computer Engineering (Master)

Lecture hall C 2 and ~~seminar room C U.132~~

Matthias Fischer

July 27th, 2026



## Presentation session (CS & CE)

| Time  | Lecture hall C 2                                | Seminar room C U.132 |
|-------|-------------------------------------------------|----------------------|
| 17:30 | ■ Project groups, registration and requirements |                      |
| 17:50 | ■ Mixed project groups (5)                      |                      |
| 18:40 | ■ CS project groups (0) ■ CE project groups (1) |                      |

- Each advisor will present their project group in a short presentation (10 min)
- Questions are not allowed

## Discussion sessions for each project group (all take place simultaneously)

| Time  | Lecture hall C 2                                             | Seminar room C U.132 |
|-------|--------------------------------------------------------------|----------------------|
| 18:50 | ■ CS and mixed project groups (5)<br>■ CE project groups (1) |                      |

- If you plan to take part in a group in Winter Semester 2026/27, **please stay!**
- **Individual discussions** in groups with the students and the advisors.
- Build small groups for questions, discussion, declare personal interest.



**Mixed Project Groups**  
(2×10 ECTS, 2×9 ECTS)  
accept both  
Computer Science and  
Computer Engineering  
students

**CS Project Groups**  
(2×10 ECTS)  
accept  
Computer Science students

**CE Project Groups**  
(2×9 ECTS)  
accept Computer  
Engineering students  
(and EE students, not the  
concern today)

| Mixed Project Groups (2×10 ECTS, 2x9 ECTS) |                                                                                                                                      | C 2 |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----|
| 17:50                                      | <b>Performance Benchmarking and Optimization for Mobile Agentic Systems</b><br>Computer Networks                                     |     |
| 18:00                                      | <b>Knowledge Graphs: Construction, Reasoning, and Retrieval-Augmented Generation</b><br>Data Science Group (DICE)                    |     |
| 18:10                                      | <b>Living Digital Forest Twins: AI-Based Monitoring of Biomass, Carbon, and Forest Dynamics</b><br>Machine Learning and Optimisation |     |
| 18:20                                      | <b>Autonomous Semantic Immune Systems for Knowledge Graph Validation</b><br>Data Science Group (DICE)                                |     |
| 18:30                                      | <b>Supervised Distributed Computing</b><br>Theory of Distributed Systems                                                             |     |



| CE Project Groups (2×9 ECTS) |                                                                                                                                     | C 2                       |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| 18:40                        | <b>Brain-inspired Spatial Navigation for Autonomous Robots</b><br>Automatic Control Group (RAT)                                     |                           |
| --:--                        | <b>Signal Processing and Machine Learning for Health Monitoring Using EEG and Smartwatch Data</b><br>Signal and System Theory Group | Not being presented today |

| CS Project Groups (2×10 ECTS) |  |
|-------------------------------|--|
|                               |  |
|                               |  |



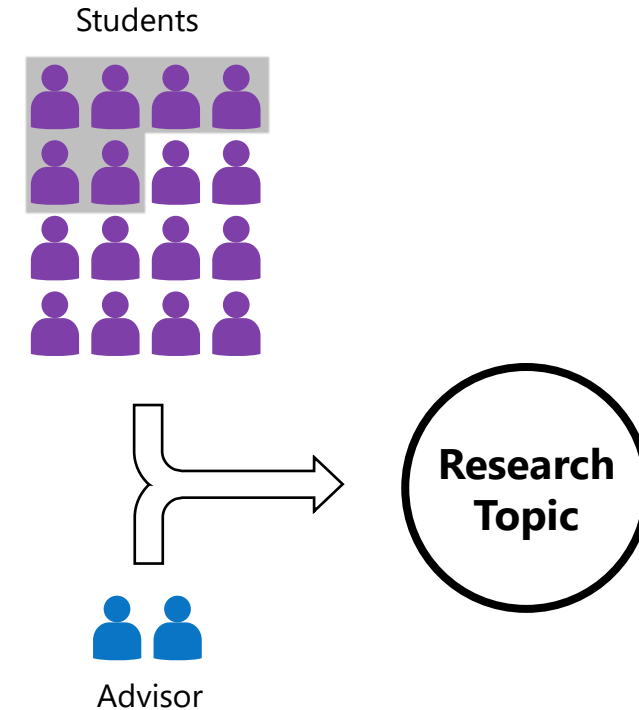
# What are project groups?



## Definition

**Group** of about 8–16 students working together on a *research-related project*

- Upper limit of 16 holds for all groups
- Lower limit may be 6 in particular situations
- Research topics come from the advisor's field of interest
- Duration: **one year** (two semesters)





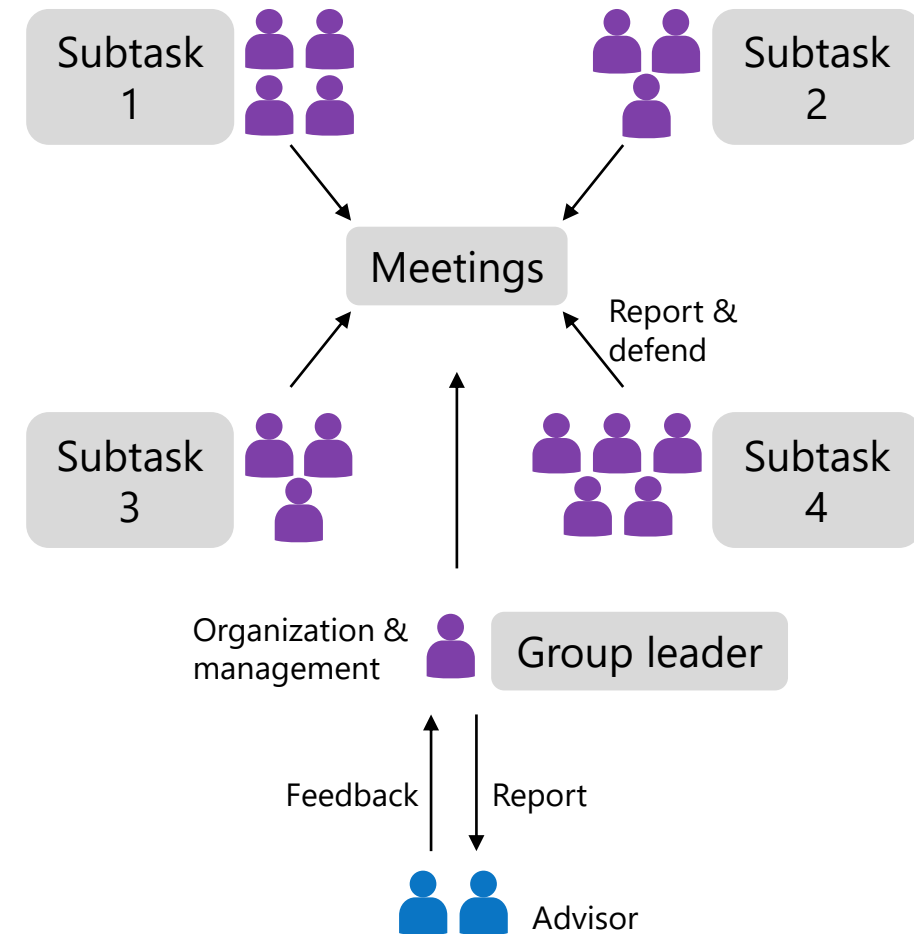
# Organization

You shall gather practical experience in **teamwork** and **organization** of a project

- Build your own **personnel structure**, similar to teams in the industry
- **Delegate** of subtasks and responsibilities to subgroups

**Division of tasks** involves

- the necessity to **report** about your work at regular intervals and
- to **defend** your own work

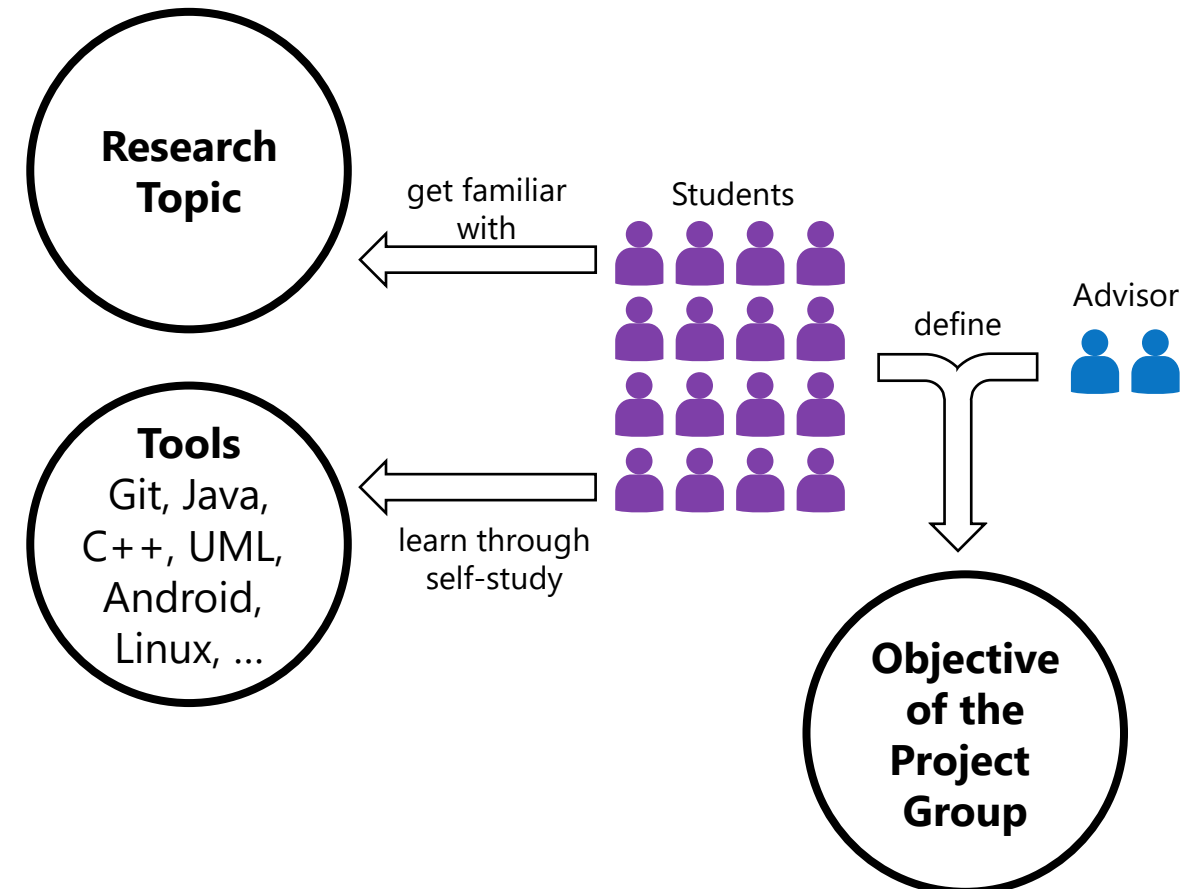




# Organization

## Self-organization

- **Define the aims** on your own together with the advisors
- **Become proficient** with necessary tools, methods and approaches **on your own**





# Outcome

## Your outcome

- You learn to work systematically and methodically
- You experience a comprehensive development processes (including final report and documentation)
- You will be intensively prepared for work in the industry
- You approach current research topics
  - » Oftentimes, students write their **master's thesis** in the same field and research topic



## Your advisor's outcome

- Project groups are a means for research
- Implementation and execution of research

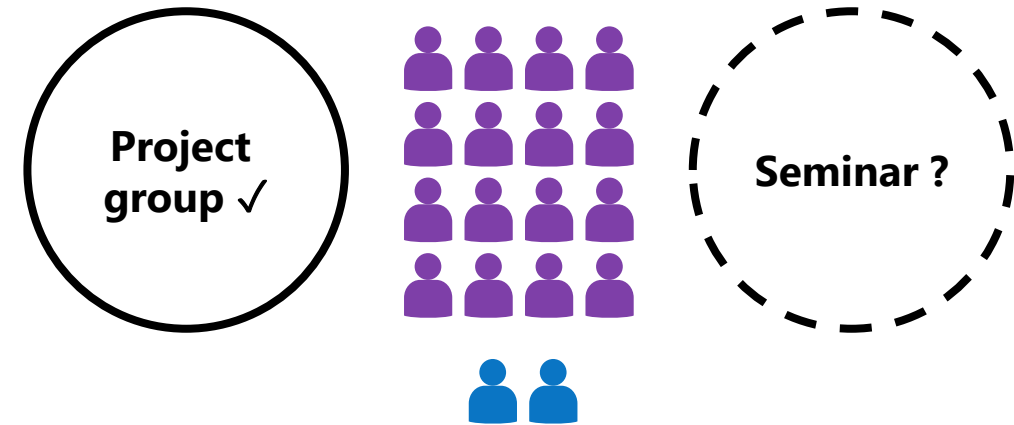




## Seminar as a parallel course

- The organizer can provide a seminar parallel to the project group
- The seminar is a **separate course**
- The organizer determines whether participation is **mandatory or optional**
- The organizer decides whether such a seminar is available or not

Please note the announcements of the organizer





## Requirements for participation

You may only participate in a project group if...

- **you successfully completed your bachelor's degree** and
- your enrollment into your master's program has been completed

Your **bachelor's degree** is **successfully completed** if

- all examinations have been passed and
- your thesis' 4.0 confirmation has been handed over to the examination office
  - by **March 31st** (for project groups starting in a summer semester) or
  - by **September 30th** (for project groups starting in a winter semester)





## Requirements for participation

You may only participate in a project group if...

- you successfully completed your bachelor's degree and
  - **your enrollment into your master's program has been completed**
- 
- Students of the bachelor's program who complete their degree only on March 31st or September 30th must therefore enroll for the Master's program **by September 21st**
  - You can submit proof of the successful completion of your studies (Bachelor's certificate or similar) **by October 23rd**
  - **Check the dates on the university website!**
    - <https://www.upb.de/zv/3-3/formalitaeten/studiengangwechsel/uebergang-bachelormaster>
    - <https://www.uni-paderborn.de/zv/3-3/bewerbung-immatrikulation/fristen>



## Application via e-mail

**Bachelor Students** who cannot apply electronically via PAUL due to a missing master status register as follows during of **Phase 1**:

To: paul@upb.de  
CC: mafi@upb.de  
Subject: Anmeldung „All Project Groups Winter Term 2026/27“  
Body: Hallo,  
Ich möchte mich zu diesem Kurs anmelden: „L.079.07099 All Project Groups Winter Term 2026/27“.

Name: **your name**  
Matrikelnummer: **your matriculation number**  
Uni-E-Mail: **your university e-mail address**  
IMT-Beutzername: **the username of your imt account**  
Studiengang: **your study program, either CS or CE**

# The assignment process



# Overview

## Phase 1: PAUL registration (for Project Groups & Seminars)

August 15<sup>th</sup> – August 24<sup>th</sup> (timely registration)

August 25<sup>th</sup> – September 20<sup>th</sup> (late registration)

## Phase 2: Assignments & Preferences

August 25<sup>th</sup> – September 20<sup>nd</sup> (September 28<sup>th</sup> preferences only)

## Phase 3: Stable Marriage

October 1<sup>st</sup>

## Phase 4: Result's Notification & Decision

October 1<sup>st</sup> (PAUL registration done by administration & e-mail notification)

Grading: September 22<sup>nd</sup> – September 28<sup>th</sup>



## Phase 1 – PAUL registration

- You register only for one course:

### **L.079.07099 All Project Groups Winter Term 2026/27**

- The course captures the registration for all project groups
- Here, you cannot choose your preferred group!
- You can see all project groups in the course catalogue, but you cannot register for them





# Phase 1 – PAUL registration

## Timely registration

You can start Phase 2 on time

**You will receive a project group/seminar in any case**

## Late registration

- The PAUL registrations are only synchronized once per week with the Jupyter server
- If you register in PAUL **during Phase 2** (Assignments & Preferences), ...
  - you can complete all assignments and preferences, but
  - you may miss interview appointments that scheduled for Phase 2 (does not apply to all organizers)
- If you register in PAUL **after Phase 2**, ...
  - you will not be able to do any assignments and thus be graded to the lowest rank in the grading of all organizers, but
  - you can still set your preferences in any case, this will be possible until the beginning of Phase 3 (Stable Marriage)



## Phase 1 – PAUL registration

Registration in PAUL is only possible if the **re-registration (matriculation renewal)** for the winter semester has been completed before then!

- The re-registration is done by paying the enrollment fee
  - <https://www.upb.de/zv/3-3/formalitaeten/rueckmeldung>
- Bank transfer **takes a few days**
- The university's administration also **takes a few days** to book the money
- Registration for project groups is only possible once both have been completed

We highly recommend that you re-register and renew your matriculation, i.e., pay the enrollment fee **now!**

**(CE students:** The one-week registration phase is only valid for project groups of EE organizers participating in this procedure. This does not apply to other project groups of EE organizers!)



## Phase 2 – Assignments & preferences

### Step 1

Students state the preferences for all project groups, not just a subset or the ones you like!

- You do not need to participate in a project group you don't like

### Step 2

Project group advisors provide **assignments**

- Used to test student's suitability for a given project group
- Students fill in these assignments for the project group they are interested in

An assignment can be...

- empty (e.g., if the organizers do not require a precondition for participation),
- a programming assignments,
- a questionnaire with free-text answer fields or
- a placeholder for a personal interview



## Phase 2 – Assignments & preferences

### Where can I find these assignments?

- Starting on August 25th, you can log onto our Jupyter server at <https://pg.cs.upb.de>

### What if I decide not to participate in any project group while the assignment phase is running?

- Please deregister from “L.079.07099 All Project Groups Winter Term 2026/27” in PAUL!

### How many assignments should I hand in?

- We recommend to do at least 3 assignments, 4–5 might be even better
- Of course, you can always hand in even more assignments

### What if I want to update what I handed in?

- You may submit an assignment as often as you like, in the end, the latest version counts



## Phase 2 – Assignments & preferences

### **What if I only submit the assignment for one project group?**

- This only works for students who are better than most of the other people who submitted that assignment
- In general, this is a very bad idea and not recommended

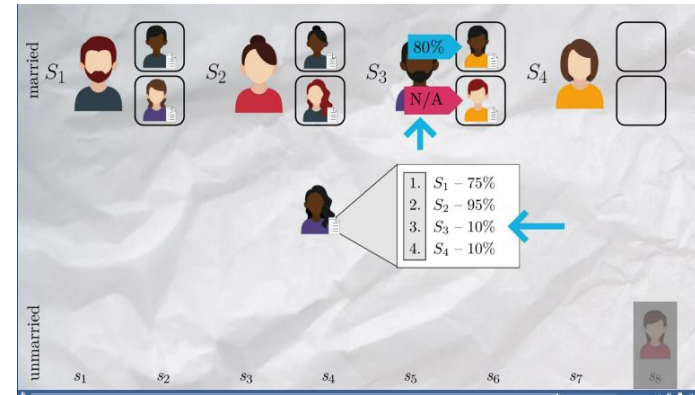
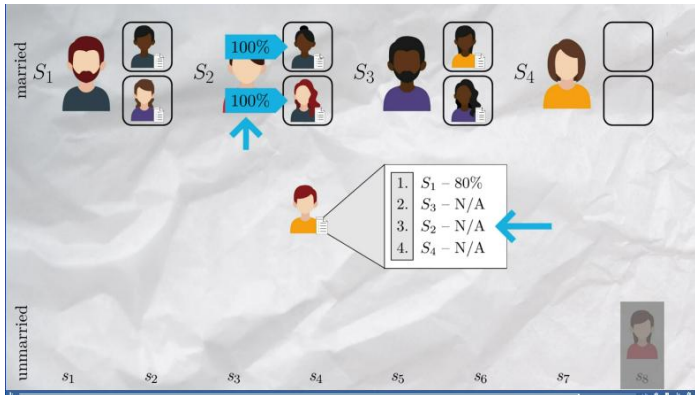
### **Example from a past seminar allocation:**

- A student submitted only the assignment for the seminar they valued with preference 1
- As 15 other students had a better score than them, the algorithm did not allocate them to the seminar they valued with preference 1
- Because they submitted no other assignments, they were allocated to their lowest preference, a seminar with preference 11

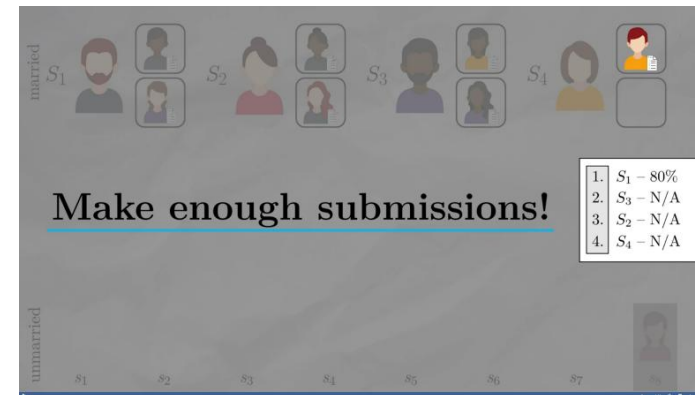
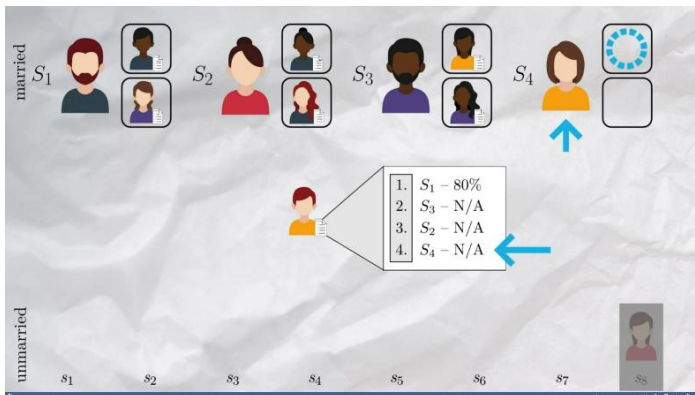




## Phase 2 – Assignments & preferences



On our website, you will find a video that explains the algorithm and shows the consequences of filling out too few assignments





## Phase 3 – Stable marriage

- The project group advisors score the assignments of the students with points
- The more points a student gets from the advisor, the greater the chance of a project group seat

Scores rank students from the project groups advisors' perspective

Preferences rank the project groups from the students' perspective

### Now, we apply the **Stable Marriage algorithm**

- Based on both, we compute a stable marriage which matches students to project groups
- The project group allocation is **not random**
- Each student gets a project group!

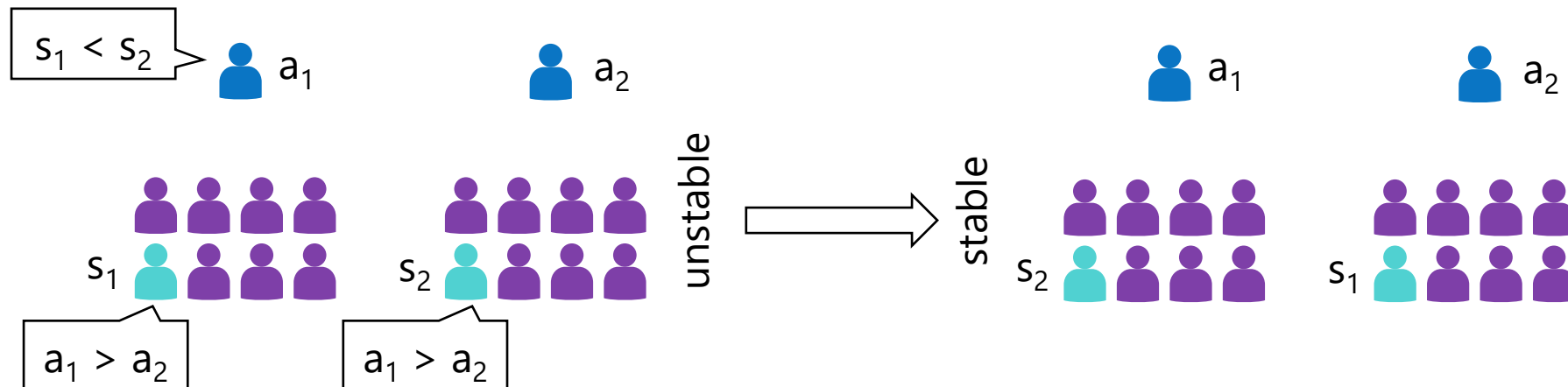




## Phase 3 – Stable marriage

### Stable Marriage – Wikipedia

A matching is a mapping from the elements of one set  $[A]$  to the elements of the other set  $[B]$ . [...]  $[A]$  matching is stable when there does not exist any pair  $(A, B)$  [in] which both prefer each other to their current partner under the matching.



**The stable marriage algorithm is a deterministic algorithm!**

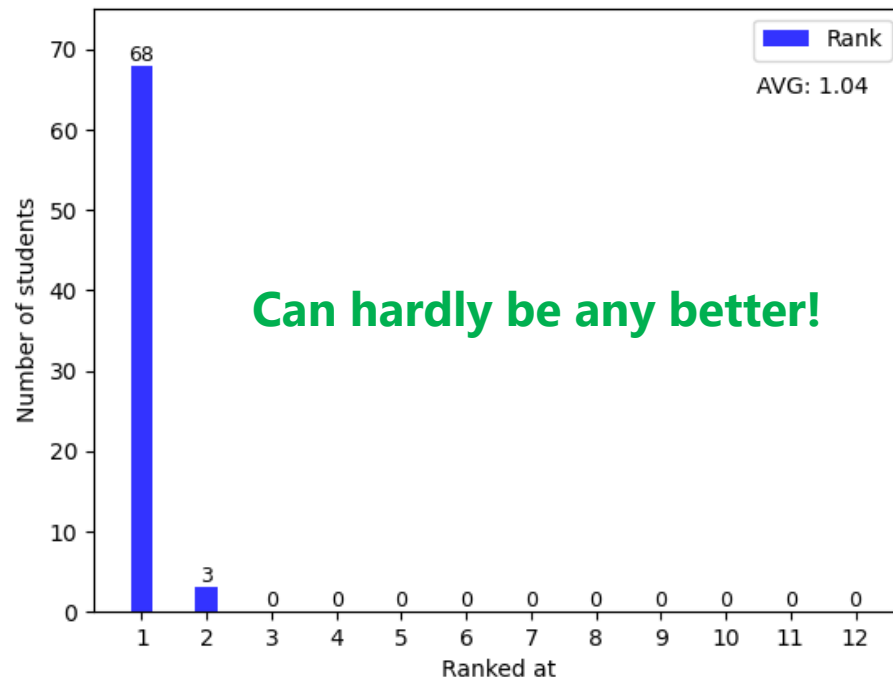




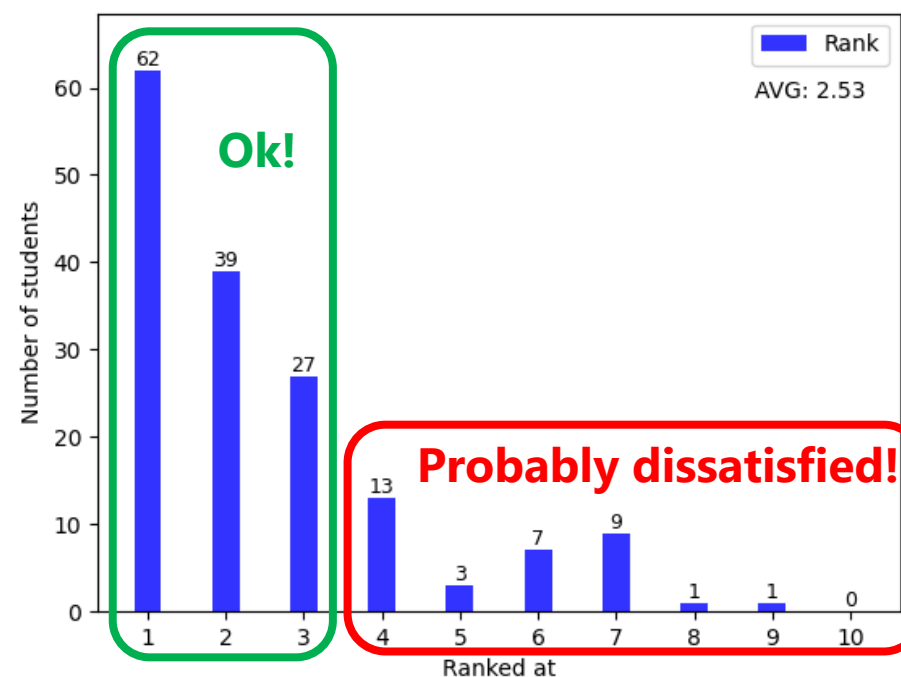
## Phase 3 – Stable marriage

- An allocation only creates satisfaction if the demand is evenly distributed over what's offered
- If too many students prefer the same project group, not all of them will be able to get their preference 1!

**Project Groups (2022/2023)**



**Seminars (Summer 2022)**





## Phase 4 – Notification & decision

- The students are informed which project group they have been assigned to (via PAUL and Jupyter)
- The final result will be entered into PAUL **by the PAUL staff**
- Students move from “L.079.07099 All Project Groups Winter Term 2026/27” to the course they have been assigned to

### What if I don't like the project group I have been assigned to?

- Deregister from your assigned course in PAUL

#### Option 1

- You start another project group in the following semester

#### Option 2

- The project groups are open for PAUL's Revision Phase (October 1<sup>st</sup> – October 31<sup>th</sup>) where the remaining spots will be available
- You may directly register in PAUL for such a project group



## More information, web pages, links, PDF files, ...

**Main web page for project groups:** <http://www.upb.de/cs/pg>

- List of all project groups with links to the individual project groups' web pages
- Information of the registration and notification process
  - <https://cs.uni-paderborn.de/studium/projektgruppen/zuordnungsverfahren>
  - <https://cs.uni-paderborn.de/en/studies/project-groups/matching-method>

**Guidelines for project groups** ("Rahmenrichtlinien für Projektgruppen")



## Good luck with your project groups!

