

# **Project Group Presentation**

**Winter Term 2021/22**

**Master Computer Science & Master Computer Engineering**

Matthias Fischer

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- Monday, July 26<sup>th</sup>, 4:15pm,
- Video Conference via BigBlueButton
  
- Please: mute microphone, no camera please!

# Agenda

## One Session for all Students CS & CE

**16:15** Why Project Groups? Registration and Requirements

**16:30** CS Project Groups (1)

**16:40** CE Project Groups (4)

**17:20** Mixed Project Groups (4)

- Each advisor will present his project group in a short presentation (approx. 10 minutes).
- The presentations will take place immediately one after the other, questions are not allowed.
- Please: mute microphone, no camera!
- BBB-room: <https://bbb.imt.upb.de/b/mat-f6t-d2q> (this room, here we are)

## Mixed Project Groups (2x10 ECTS, 2x9 ECTS)

accept both  
Computer Science and  
Computer Engineering  
students

## CS Project Groups (2x10 ECTS)

accept  
Computer Science  
students

## CE Project Groups (2x9 ECTS)

accept Computer  
Engineering students  
(and EE students, not  
the concern today)

## CS Project Groups (2x10 ECTS)

16:30	<b>Knowledge base question answering</b> Data Science Group
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## CE Project Groups (2x9 ECTS)

16:40	<b>Disaster Response Robots</b> GET Lab - Cognitive Systems Engineering
16:50	<b>Reinforcement Learning for Electrical Energy Conversion</b> Power Electronics and Electrical Drives
17:00	<b>Brain-controlled robot navigation using EEG signals</b> Signal and System Theory Group
17:10	<b>Diarization on Fearless Steps</b> Communications Engineering

## Mixed Project Groups (2x10 ECTS, 2x9 ECTS)

17:20	<b>C++ RDF Support Library</b> Datascience
17:30	<b>TLS Academy</b> System Security
17:40	<b>Fit-VR: Personalized and Collaborative Fitness Training in Virtual Reality</b> Database and Information Systems
17:50	<b>HPC Performance Almanac</b> High-Performance IT Systems

# Agenda

## Discussion Sessions (multiple, all take place simultaneously)

approx. 18:00 (after ALL presentations)

- If you plan to take part in a group in Winter Term 2021/22, please stay!
- There will be individual discussions in groups with the students and the advisors.
- Build small groups for questions, discussion, declare personal interest.

## How ?

- Each project group advisor has its own BBB room.
- You can visit any BBB room in any order.

## Where are the BBB-links of the project group advisors?

- Below the name of the project group on the website:  
<http://www.upb.de/cs/pg>

### CS + CE Project Groups

- Title of PG: **C++ RDF Support Library (rdf4cpp)**  
Supervisor: **Alexander Bigerl**  
Research Group: Datascience  
**BBB video room** for individual discussions after the presentations
- Title of PG: **TLS Academy (TLSA)**  
Supervisor: **Juraj Somorovsky, Sven Hebrok**  
Research Group: System Security  
**BBB video room** for individual discussions after the presentations
- Title of PG: **Fit-VR: Personalized and Collaborative Fitness Training in Virtual Reality (Fit-VR)**  
Supervisor: **Enes Yigitbas**  
Research Group: Database and Information Systems  
**BBB video room** for individual discussions after the presentations
- Title of PG: **HPC Performance Almanach (HPC-PA)**  
Supervisor: **Christian Plessl**  
Research Group: High-Performance IT Systems  
**BBB video room** for individual discussions after the presentations

### CS Project Groups

- Title of PG: **Knowledge base question answering (KBQA)**  
Supervisor: **Daniel Vollmers, Nikit Srivastava**  
Research Group: Data Science Group  
**BBB video room** for individual discussions after the presentations

### CE Project Groups

- Title of PG: **Disaster Response Robots (DRR)**  
Supervisor: **Dirk Fischer, Bärbel Mertsching**  
Research Group: GET Lab - Cognitive Systems Engineering  
**BBB video room** for individual discussions after the presentations
- Title of PG: **Reinforcement Learning for Electrical Energy Conversion (LEARL)**  
Supervisor: **Wilhelm Kirchgässner, Oliver Wallscheid, Daniel Weber, Maximilian Schenke**  
Research Group: Power Electronics and Electrical Drives  
**BBB video room** for individual discussions after the presentations
- Title of PG: **Brain-controlled robot navigation using EEG signals (EEG-SST)**  
Supervisor: **Isabell Lehmann, Tanuj Hasija**  
Research Group: Signal and System Theory Group  
**BBB video room** for individual discussions after the presentations
- Title of PG: **Diarization on Fearless Steps (Fearless)**  
Supervisor: **Jens Heitkaemper**  
Research Group: Communications Engineering  
**BBB video room** for individual discussions after the presentations

# Definition

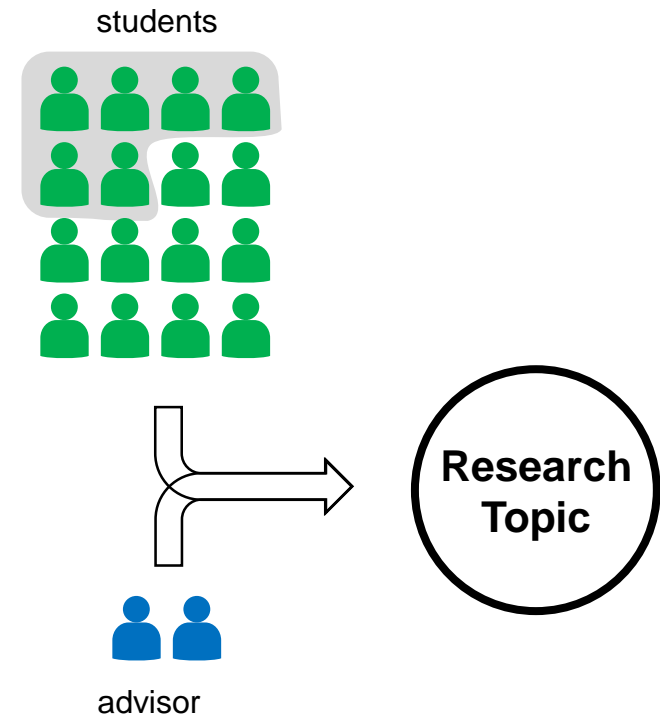
## Project Group

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

- Upper limit 16 holds for all groups!
- Lower limit 6 in particular situations!

### Research topics

from the advisor's field of interest



Duration: **one year** (two terms)

Default language is English.

If all participating students agree, the group can be held in German.

# Aims: Improvement of character building (1/2)

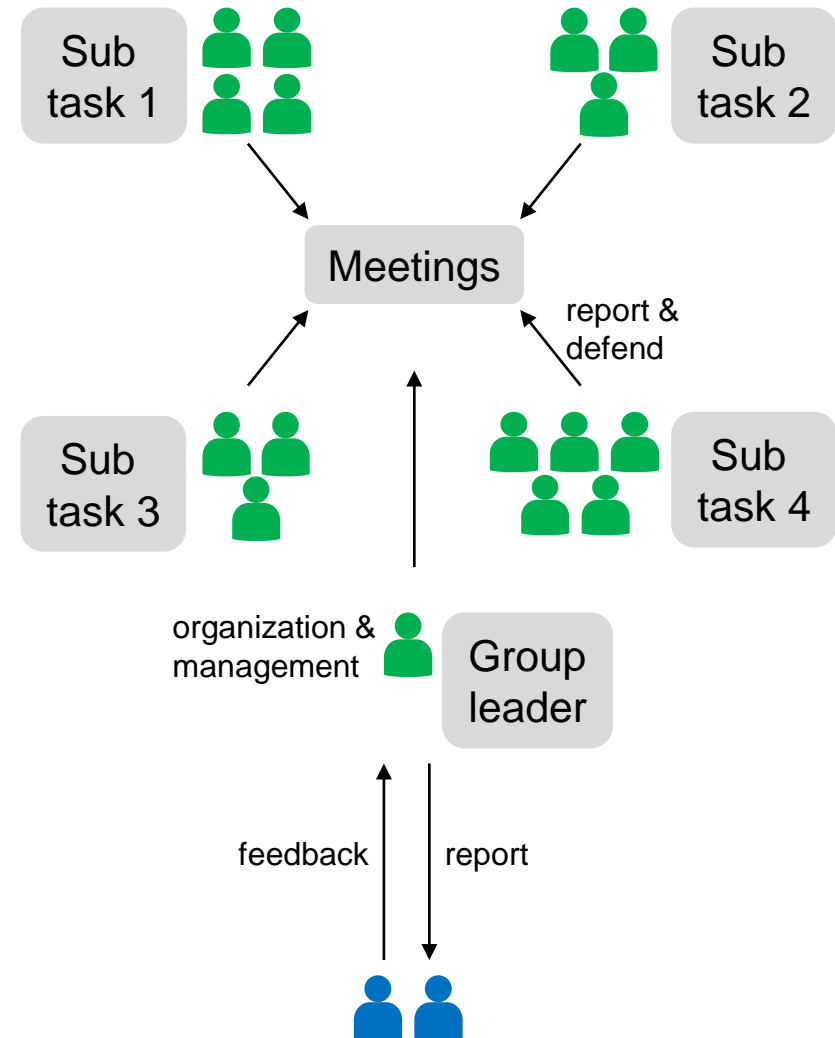
## Project Group

Practical experience in **teamwork** and **organization** of a project

- Build your own **personnel structure**, similarly to an industrial team
- **Delegation** of sub tasks and responsibilities to subgroups

**Division of tasks** involves

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

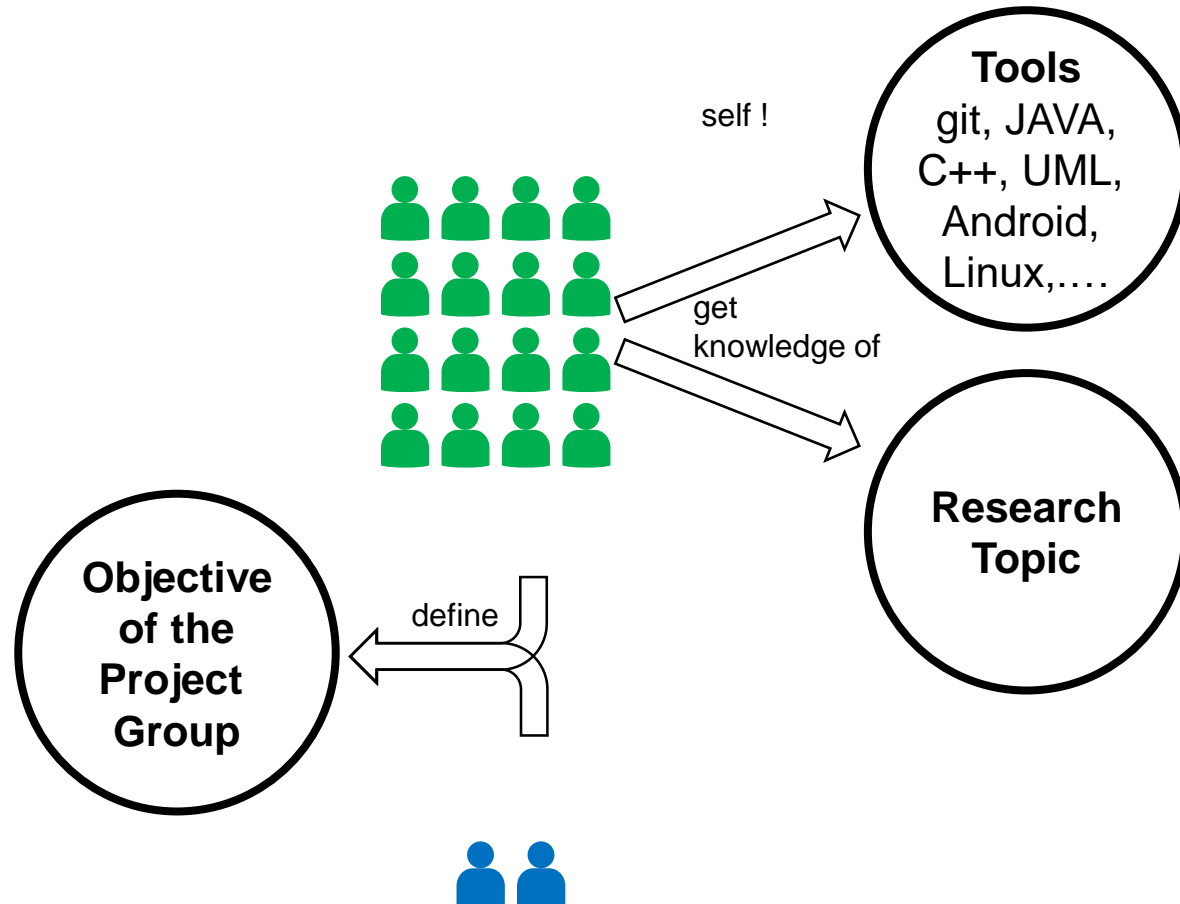


# Aims: Improvement of character building (2/2)

## Project Group

### Self-organization

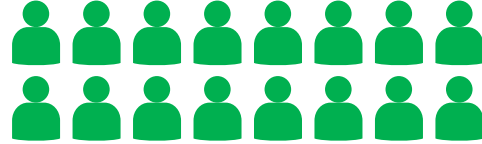
- **Define the aims** on your own together with the advisors
- **Self training** with necessary tools, methods and approaches



# Outcome

## Project Group

### Your our outcome



### You learn

- systematic and methodic working
- comprehensive development processes (including final report and documentation)

### You

- will be intensively prepared for industrial practice
- approach current research topics  
(often students write their **master's theses** in the same field and research topic)

### Advisor's outcome



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



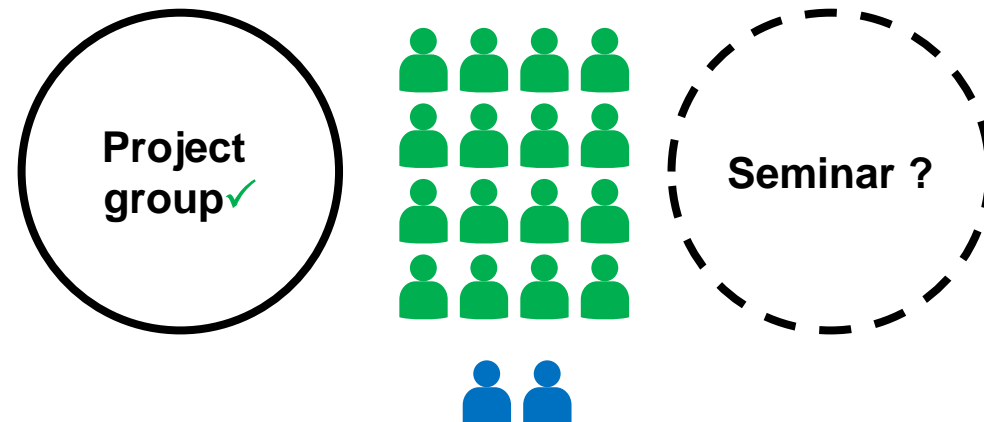
# Seminar

## Project Group

### Seminar as 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

## Project Group

Project group **can only be started** when the **bachelor's degree** has been successfully **completed**

**Bachelor's degree** is successfully **completed**, when

- all examinations have been passed and
- the thesis' 4.0 confirmation is handed over to the examination secretariat (Lessmann, Guhlich,...)
  - by **31 March** (PGs starting summer term) and
  - by **30 September** (PGs starting winter term)

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

**Send e-mail to:** To: [paul@upb.de](mailto:paul@upb.de) CC: [mafi@upb.de](mailto:mafi@upb.de)

**Subject:** "Anmeldung All Project Groups Winter Term 2021/22"

**E-mail body:** Hallo,  
ich möchte mich zu diesem Kurs anmelden: All Project Groups Winter Term 2021/22  
Name: ??? Matrikelnummer: ??? Uni-E-Mail: ??? IMT-Benutzername: ???

# Requirements for Participation

## Project Group

Project group **can only be started** when the **enrollment in the master's program** has been **completed**

Students of the bachelor's program,

- who reach the 4.0 confirmation or examinations only on the 31st of March or on the 30th of September,
- must therefore enroll for the Master's program in the relevant period of the change of studies (**by 21 September, see uni webpage!**)  
<https://www.upb.de/zv/3-3/formalitaeten/studiengangwechsel/uebergang-bachelormaster>
- you can submit proof of successful completion of your studies (Bachelor's certificate and deed or a corresponding certificate from the office responsible for issuing the deed) **by 23 October, see uni webpage!**  
<https://www.upb.de/zv/3-3/formalitaeten/studiengangwechsel/uebergang-bachelormaster>

# How to Get a Project Group

## Method to Match Students to Project Groups

Method consist of 4 phases:

- **Phase 1: PAUL registration**  
9 August - 15 August (timely registration)  
16 August - 27 September (late registration)
- **Phase 2: Assignments & Preferences**  
17 August - 15 September
- **Phase 3: Stable Marriage**  
27 September
- **Phase 4: Notification & Decision**  
28 September - 1 October
  
- Advisor final grading: 20 - 24 September



# How to Get a Project Group

## PAUL registration

### Phase 1 – PAUL registration

- 9 August - 15 August (timely registration)  
16 August - 27 September (late registration)
- You register only for one course:  
“**L.079.07099 All Project Groups Winter Term 2021/22**”
- 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 can't register for them



# How to Get a Project Group

## PAUL registration

"Phase 1: PAUL Registration" consists of two registration periods directly following each other.



### Timely registration 9 August - 15 August

- You will receive a project group/seminar in any case
- You can start Phase 2 on time

### Late registration 16 August - 27 September

- You will receive a project group/seminar in any case
- the registration in PAUL is only synchronized once a week with the access to Jupyter
- If you register in PAUL during Phase 2 (Assignments & Preferences)
  - you can complete all assignments and preferences
  - late access to Jupyter may cause you to miss interview appointments that were scheduled in Phase 2 (applies only to organizers who are conducting interviews)
- If you register in PAUL after Phase 2
  - you will not be able to do any assignments and you will be graded to the lowest rank in the grading of all organizers
  - but you can still set your preferences in any case, this will go until the beginning of Phase 3 (Stable Marriage).

# How to Get a Project Group

## PAUL registration

### Registration in PAUL is only possible

- if the **re-registration (renewal of matriculation)** 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>

### Please note!

- 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 therefore highly recommend that you re-register and renew your matriculation, i.e. pay the enrollment fee **NOW!** **DON'T WAIT!**

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

# How to Get a Project Group

## Assignments & Preferences

### Phase 2 – Assignments & Preferences

- 17 August - 15 September

Consist of 2 steps:

#### Step 1

- Students state the preferences for all project groups
- All means all and not just 1 or 2 or just the one you like!

Do students have to participate in a project group they do not like?

→ No! See below



# How to Get a Project Group

## Assignments & Preferences

### Phase 2 – Assignments & Preferences

- 17 August - 15 September

Consist of 2 steps:

#### Step 2

- Project group advisors provides an "assignment"
- Used to test student's suitability for a given project group
- Students fill in these assignments for the project group they are interested in

Assignment can be

- Empty (e.g., if the organizers do not require a precondition for participation)
- Programming assignments
- Free-text answers
- Placeholder for a personal interview
- ... or whatever the organizer needs

# How to Get a Project Group Assignments & Preferences

## Phase 2 – Assignments & Preferences

- 17 August - 15 September

Consist of 2 steps:

### Both Steps

- Where? → Tool chain by Jupyter and nbgrader extension
- You can log in starting on 17 August

### For how many project groups should I take the test?

Recommendation

- Minimum: 3
- Better: 4 - 5
- More than five? → May be waste of time

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

→ **Deregister** in PAUL L.079.07099

All Project Groups Winter Term 2021/22 !

# How to Get a Project Group

## Stable Marriage

### Phase 3: Stable Marriage

- **27 September**
- The project group advisors score the assignments of the students with points (20 - 24 September)
- The more points a student gets from the advisor, the greater the chance of a project group place

### Now we apply the Stable Marriage algorithm

- Scores rank students from project groups advisor's perspective
- Preferences of the students rank the project group from student perspective
- Based on both, we compute a stable marriage
- The Stable Marriage algorithm matches students to project groups
- Each student gets a project group!

# How to Get a Project Group

## Stable Marriage

### Stable Marriage - Wikipedia

“ A matching is a mapping from the elements of one set to the elements of the other set.

A matching is not stable if:

1. There is an element A of the first matched set which prefers some given element B of the second matched set over the element to which A is already matched, and
2. B also prefers A over the element to which B is already matched.

In other words, a matching is stable

when there does not exist any match (A, B)  
by which both A and B would be individually better  
off than they are with the element to which they are currently matched. “

Stable Marriage Algorithm is a deterministic algorithm !

# How to Get a Project Group

## Notification & Decision

### Phase 4: Notification & Decision

- 28 September - 1 October
- The students are informed which project group they have been assigned (by PAUL and Jupyter system)
- Final result will be entered into PAUL, students move from the course L.079.07099 All Project Groups Winter Term 2021/22 to the actual course by PAUL administration

# How to Get a Project Group

## Notification & Decision

### Phase 4: Notification & Decision

- 28 September - 1 October

### Do students have to participate in a project group they do not like?

1. No, they can refuse the assigned project group!  
However, they will not get another project group in Winter Term 2021/22!
2. The only exception is:
  - two students wish to swap seats and receive the approval from both advisors, they can do so
  - Seats become available (e.g., because students have cancelled) and advisors agree

### How is this organized?

- Students ask me by email: [mafi@upb.de](mailto:mafi@upb.de)
- Advisors email me free places

# More Information, Webpages, Links, pdf Files

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

- **Listing** of all project groups (each listed group points to advisor's PG web page)
- Information of the overall **registration and notification process**  
<https://cs.upb.de/studium/studienelemente/projektgruppen/zuordnungsverfahren>  
<https://cs.upb.de/en/studies/study-elements/project-groups/matching-method>
- **Guidelines for project groups**  
follow the links  
„guidelines for project groups“ <https://cs.upb.de/en/studies/study-elements/general-guidelines/project-groups>  
Rahmenrichtlinien für Projektgruppen“ <https://cs.upb.de/studium/studienelemente/rahmenrichtlinien/projektgruppen>
- Please read it before you start a project group!

Thank you for listening!