

# **Project Group Presentation**

**Summer Term 2020**

**Master Computer Science & Master Computer Engineering**

Matthias Fischer

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- Monday, January 27<sup>th</sup>, 6:00pm,
- Rooms O1 and O1.258

# Agenda

## Joint Session for CE + CS Students

**18:00** Why Project Groups? Registration and Requirements

**18:15** [Mixed Project Groups](#) – Room: **O1**

After the last talk: CE students move to **O1.258** CS students stay here

## Parallel Sessions

**19:40** [CS Project Groups](#) – Room: **O1**

**19:40** [CE Project Groups](#) – Room: **O1.258**

## Discussion Session

If you plan to take part in a group in Summer Term 2020, please stay here!

**20:00 (CS), 20:30 (CE):** In front of or in room **O1, O1.258**

- build small groups for questions, discussion, application, declare personal interest
- **CE students (room O1.258)** can first discuss with CE advisors and afterwards come back to **O1**
- **Mixed PG advisors:** Please wait for CE students (at least until 20:30) !!!

## 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)

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

18:15	<b>3D Environment Based Intelligent Systems Engineering of Advanced Systems</b> Advanced Systems Engineering, <i>Roman Dumitrescu</i>
18:25	<b>Multi-armed bandit algorithms</b> Intelligent Systems and Machine Learning, <i>Eyke Hüllermeier</i>
18:35	<b>Artificial Intelligence in Computer Networks</b> Computer Networks, <i>Holger Karl</i>
18:45	<b>Artificial Intelligence for Systems Engineering</b> Advanced Systems Engineering, <i>Roman Dumitrescu</i>
18:55	<b>Virtual Reality in Design Thinking</b> Advanced Systems Engineering, <i>Roman Dumitrescu</i>
19:05	<b>Local Strategies for 2- and 3-dimensional Swarm Formation Problems</b> Algorithms and Complexity, <i>Friedhelm Meyer auf der Heide</i>
19:15	<b>Virtual and Augmented Reality Assisted Robot Programming</b> Database and Information Systems, <i>Gregor Engels</i>
19:25	<b>Robust Distributed Transaction System</b> Theory of Distributed Systems, <i>Christian Scheideler</i>
19:35	<b>PhASAR Input/Output</b> Software Engineering, <i>Eric Bodden</i>

## CS Project Groups (2x10 ECTS)

19:40	<b>University Credits 4.0</b> IT Security, <i>Ben Hermann</i>
19:50	<b>Data Science Suite IV</b> Data Science, <i>Axel Ngonga</i>

## CE Project Groups (2x9 ECTS)

19:40	<b>Disaster Response Robots</b> GET Lab - Technische kognitive Systeme, <i>Bärbel Mertsching</i>
19:50	<b>Signal Processing and Maschine Learning over Acoustic Sensor Networks</b> Communications Engineering Group, <i>Jörg Schmalenströer</i>
20:00	<b>Design &amp; Implementation of a HexaPod</b> Computer Engineering (EIM-E), <i>Sybille Hellebrand</i>
20:10	<b>Reinforcement Learning for Electric Motor Control</b> Power Electronics and Electrical Drives, <i>Joachim Böcker</i>
20:20	<b>Signal processing and machine learning of brain signals using EEG</b> Signal and System Theory Group, <i>Peter Schreier</i>

# Definition

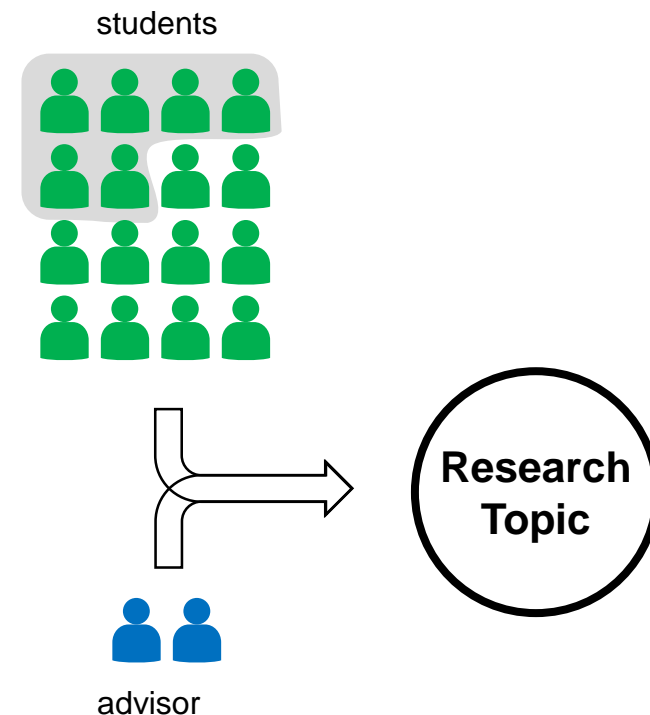
## Project Group

**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)

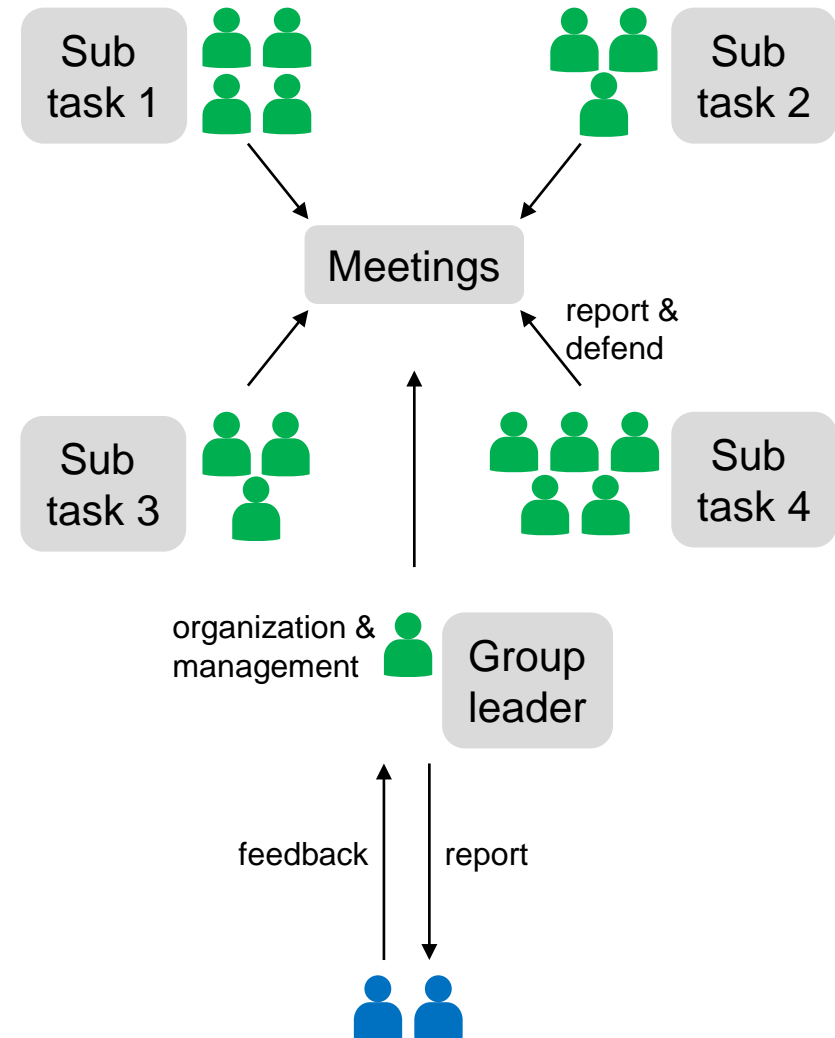
## Project Group

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

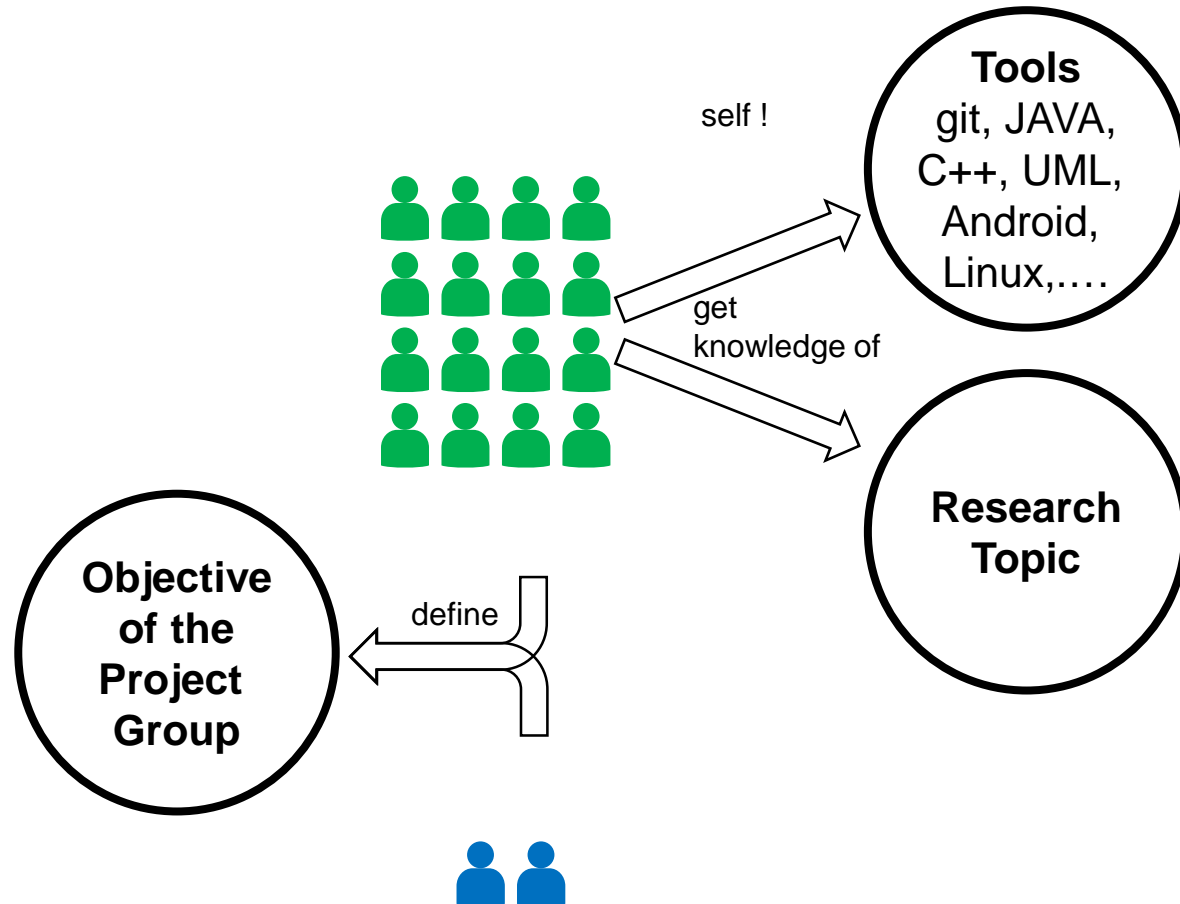


# Aims: Improvement of character building (2/2)

## 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



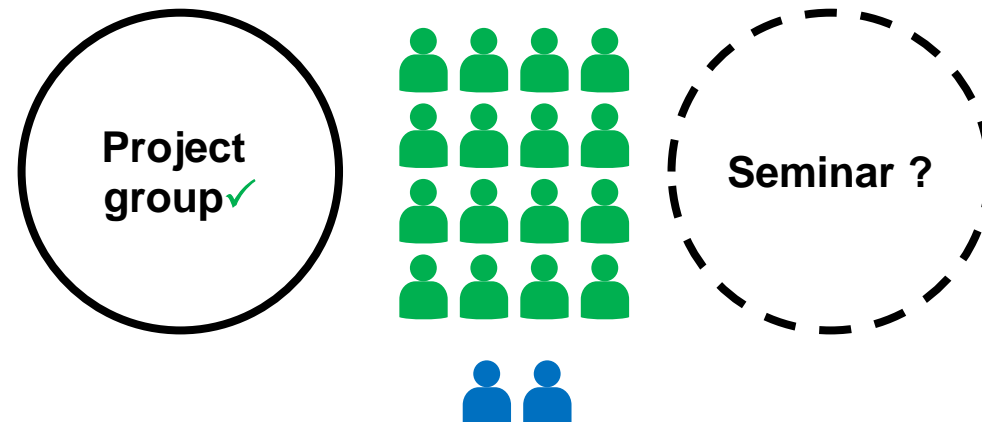
# Seminar

## 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)

# 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 March, 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 April, 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:

- **Phase1:** PAUL registration  
February 17 - February 23, only one week !
- **Phase 2:** Assignments & Preferences  
February 27 - March 15
- **Phase 3:** Stable Marriage  
March 23 - 27
- **Phase 4:** Notification & Decision  
March 30
- Advisor final grading: March 16 - 20

Januar	Februar	März	April
1 Mi <small>Neujahr</small>	1 Sa	1 So	1 Mi
2 Do	2 So	2 Mo <small>10</small>	2 Do
3 Fr	3 Mo <small>6</small>	3 Di	3 Fr
4 Sa	4 Di	4 Mi	4 Sa
5 So	5 Mi	5 Do	5 So
6 Mo <small>Hl. Drei Könige</small> <small>2</small>	6 Do	6 Fr	6 Mo <small>Vorl. Beginn</small>
7 Di	7 Fr	7 Sa	7 Di
8 Mi	8 Sa	8 So	8 Mi
9 Do	9 So	9 Mo <small>11</small>	9 Do
10 Fr	10 Mo <small>7</small>	10 Di	10 Fr <small>Karfreitag</small>
11 Sa	11 Di	11 Mi	11 Sa
12 So	12 Mi	12 Do	12 So <small>Ostern</small>
13 Mo <small>3</small>	13 Do	13 Fr	13 Mo <small>Ostermontag</small> <small>16</small>
14 Di	14 Fr	14 Sa	14 Di
15 Mi	15 Sa	15 So	15 Mi
16 Do	16 So	16 Mo <small>12</small>	16 Do
17 Fr	17 Mo <small>8</small>	17 Di	17 Fr
18 Sa	18 Di	18 Mi	18 Sa
19 So	19 Mi	19 Do	19 So
20 Mo <small>4</small>	20 Do	20 Fr	20 Mo <small>17</small>
21 Di	21 Fr	21 Sa <small>Rückmeldung</small>	21 Di
22 Mi	22 Sa	22 So	22 Mi
23 Do	23 So	23 Mo <small>13</small>	23 Do
24 Fr	24 Mo <small>Rosenmontag</small> <small>9</small>	24 Di	24 Fr
25 Sa	25 Di	25 Mi	25 Sa
26 So	26 Mi	26 Do	26 So
27 Mo <small>5</small>	27 Do	27 Fr	27 Mo <small>18</small>
28 Di	28 Fr	28 Sa	28 Di
29 Mi	29 Sa	29 So <small>Beginn der Sommerzeit</small>	29 Mi
30 Do		30 Mo <small>14</small>	30 Do
31 Fr <small>Vorl. Ende</small>		31 Di	

# How to Get a Project Group

## PAUL registration

### Phase 1 – PAUL registration

- February 17 - February 23, only one week !
- You register only for one “virtual” project group:  
“**L.079.07099 All Project Groups Summer Term 2020**”
- The course captures the registration for all project groups, here you cannot choose your preferred groups!
- 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

### Registration in PAUL is only possible

- if the **re-registration (renewal of matriculation)** for the summer 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!**

We will not accept any late registration for project groups due to too late renewal of matriculation. **NO EXCEPTIONS!**

(CE students: The one-week registration phase is only valid for PGs of ET organizers participating in this procedure.)

# How to Get a Project Group

## Assignments & Preferences

### Phase 2 – Assignments & Preferences

- February 27 - March 15

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

- February 27 - March 15

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
- ... whatever the organizer needs



# How to Get a Project Group Assignments & Preferences

## Phase 2 – Assignments & Preferences

- February 27 - March 15

Consist of 2 steps:

### Both Steps

- Where? → Tool chain by Jupyter and nbgrader extension
- You can log in starting on 27<sup>th</sup> February

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

Recommendation

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

### New !

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

→ Please deregister in PAUL L.079.07099 All Project Groups Summer Term 2020 !

# How to Get a Project Group

## Stable Marriage

### Phase 3: Stable Marriage

- **March 23 - 27**
- The project group advisors score the assignments of the students with points (March 16 - 20)
- The more points a student gets from the advisor, the greater the chance of a project group seat

### 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

- **March 30**
- The students are informed which project group they have been assigned  
(We do not yet know how you get informed, probably by PAUL)
- Final result will be entered into PAUL,  
students move from virtual project group  
L.079.07099 All Project Groups Summer Term 2020  
to the actual course by PAUL administration

# How to Get a Project Group

## Notification & Decision

### Phase 4: Notification & Decision

- March 30

### 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!
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 the advisors by email
- Advisors announce free places (e.g. webpage, e-mail)

# 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**
- **Guidelines for project groups** (Rahmenrichtlinien für Projektgruppen)  
follow the links „guidelines for project groups / Rahmenrichtlinien für Projektgruppen“  
Please read it before you start a project group!

**Bachelor Students** who cannot apply electronically via PAUL due to missing master status register in written form via the printed form

- German: "Antrag auf Zulassung zu einer Lehrveranstaltung in PAUL"  
[http://www.upb.de/fileadmin/paul-info/Formulare/Antrag\\_Anmeldung.pdf](http://www.upb.de/fileadmin/paul-info/Formulare/Antrag_Anmeldung.pdf)  
English: "Application for admission to a course "  
[http://www.upb.de/fileadmin/paul-info/Formulare/Antrag\\_Anmeldung\\_english.pdf](http://www.upb.de/fileadmin/paul-info/Formulare/Antrag_Anmeldung_english.pdf)  
both on: <http://www.upb.de/studium/paul-info/formulare>
- **AND**: Send an email to PAUL to apply for project group's registration