

Project Group Presentation

Winter Term 2020/21

Master Computer Science & Master Computer Engineering

Matthias Fischer

- Monday, July 13th, 4:15pm,
- Video Conference via BigBlueButton

- Please: mute microphone, no camera!

Agenda

One Session for all Students CS & CE

16:15 Why Project Groups? Registration and Requirements

16:35 Mixed Project Groups (7)

17:45 CS Project Groups (2)

18:05 CE Project Groups (3)

- 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)

Agenda

Discussion Sessions (multiple)

approx. 18:35 (after ALL presentations)

- If you plan to take part in a group in Winter Term 2020/21, 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 this website:
- <http://www.upb.de/cs/pg> (German)
<http://www.upb.de/cs/pgen> (English)

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

Example

Below the name of the project group on this website:

- <http://www.upb.de/cs/pg>
(German)
- <http://www.upb.de/cs/pgen>
(English)

New project groups for Master Computer Science and Master Computer Engineering

Winter Term 2020/21

CS + CE Project Groups

- Title of PG: **Digital Tools for Strategic Planning (DOORSTEP)**
Supervisor: **Maurice Meyer, Ingrid Wiederkehr**
Research Group: Advanced Systems Engineering
BBB video room for individual discussions after the presentations
- Title of PG: **Planning of the digital Transformation with Digital Tools (POTATO)**
Supervisor: **Michel Scholtysik, Jannik Reinhold, Patrick Ködding**
Research Group: Advanced Systems Engineering
BBB video room for individual discussions after the presentations
- Title of PG: **CIRCA: An Approximate Computing Tool Flow (CIRCA)**
Supervisor: **Linus Witschen, Marco Platzner**
Research Group: Computer Engineering Group
BBB video room for individual discussions after the presentations
- Title of PG: **Knowledge Graph Summarization (KG-SUM)**
Supervisor: **Diego Moussallem**
Research Group: Data Science
BBB video room for individual discussions after the presentations
- Title of PG: **Knowledge Graph Verbalization (KG2NL)**

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

16:35	Digital Tools for Strategic Planning Advanced Systems Engineering
16:45	Planning of the digital Transformation with Digital Tools Advanced Systems Engineering
16:55	CIRCA: An Approximate Computing Tool Flow Computer Engineering Group
17:05	Machine Learning for Predictive Maintenance Intelligent Systems and Machine Learning
17:15	TLS-Attacker: Evaluating the TLS ecosystem System Security
17:25	Knowledge Graph Summarization Data Science
17:35	Knowledge Graph Verbalization Data Science

CS Project Groups (2x10 ECTS)

17:45	Data Science Suite V Data Science
17:55	Digital Pentomino Didactics of Computer Science

CE Project Groups (2x9 ECTS)

18:05	Reinforcement Learning for Electric Motor Control Power Electronics and Electrical Drives
18:15	Disaster Response Robots GET Lab
18:25	Designing a Brain-Controlled Machine using EEG Signals Signal and System Theory Group

Hint for CE Students

CE Students can also take part in the following project groups of Electrical Engineering organizers. However, these PGs are not presented here today.

- L.048.28501 Communications and Speech Processing
- L.048.28503 Electronic System Design
- L.048.28504 Entwurf elektronischer Systeme
- L.048.28508 Signal Processing
- L.048.28510 Entwicklung von Mess- und Analyse-Software
- L.048.28511 System Test und Diagnose
- L.048.28512 Power Electronics and Electrical Drives
- L.048.28515 Silicon Photonics

Definition

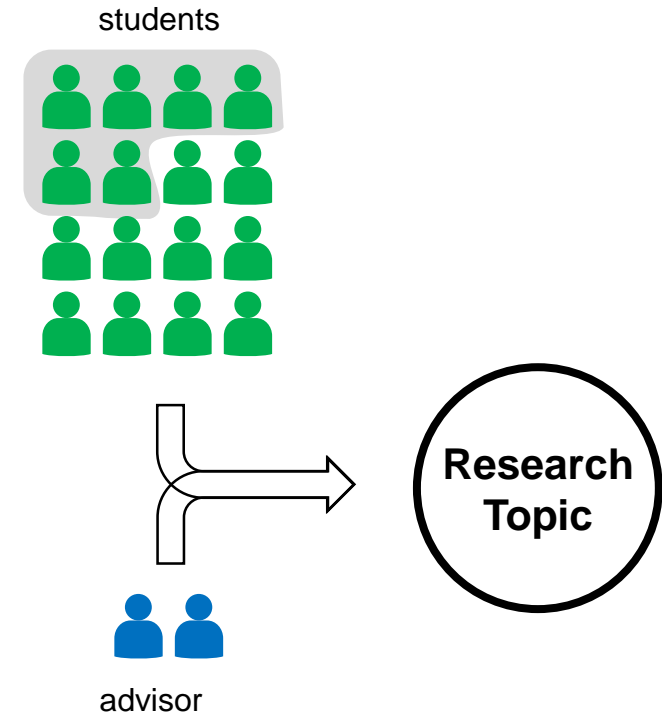
Project Group

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)

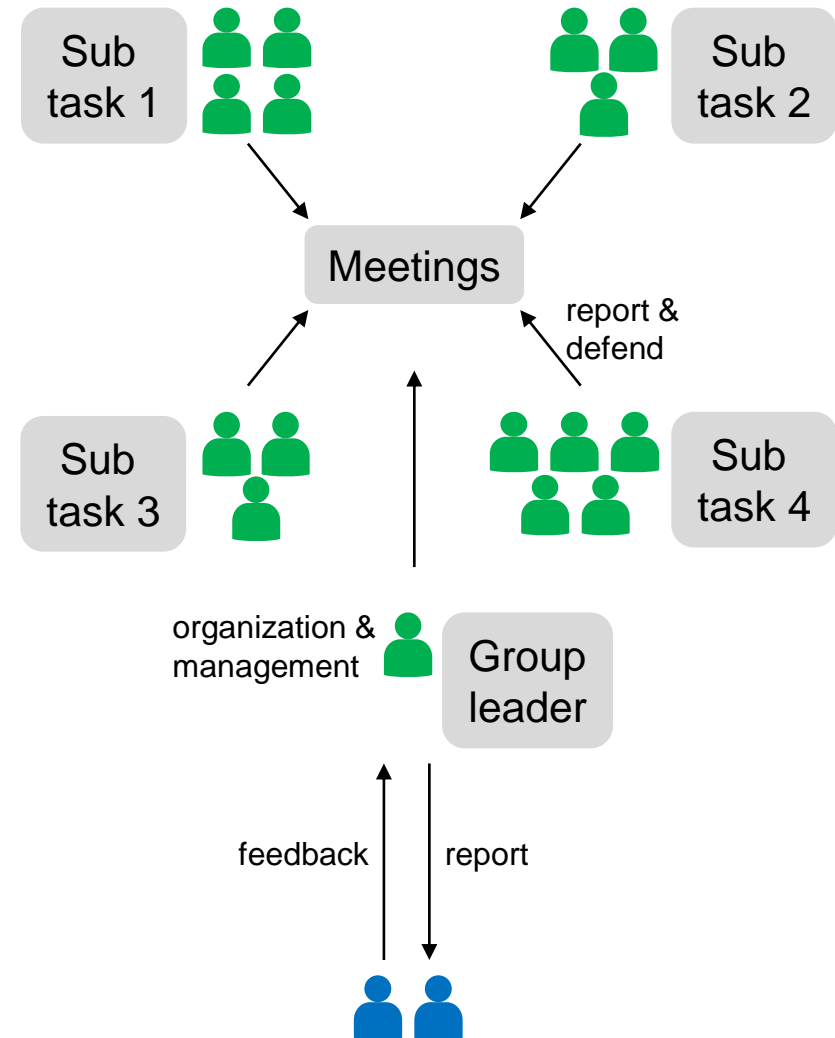
Project Group

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

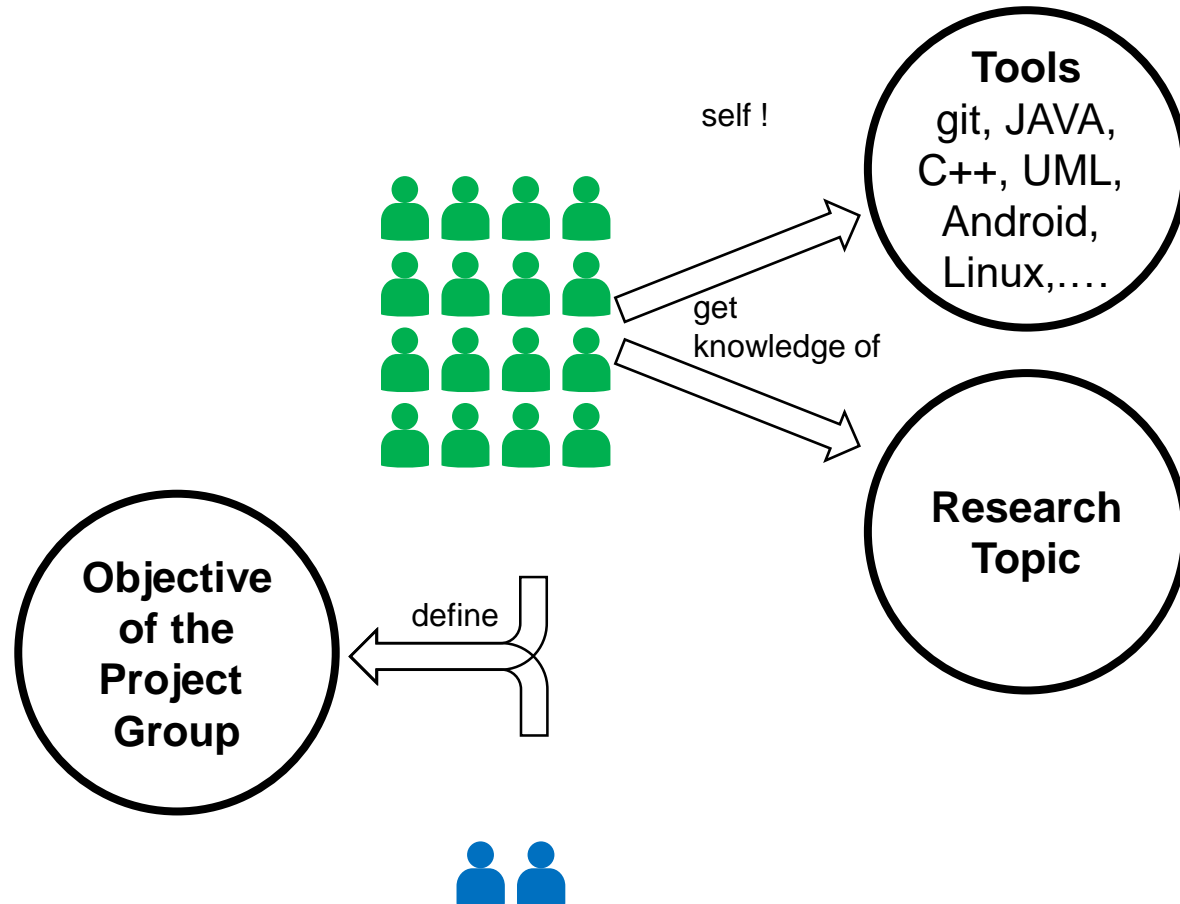


Aims: Improvement of character building (2/2)

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

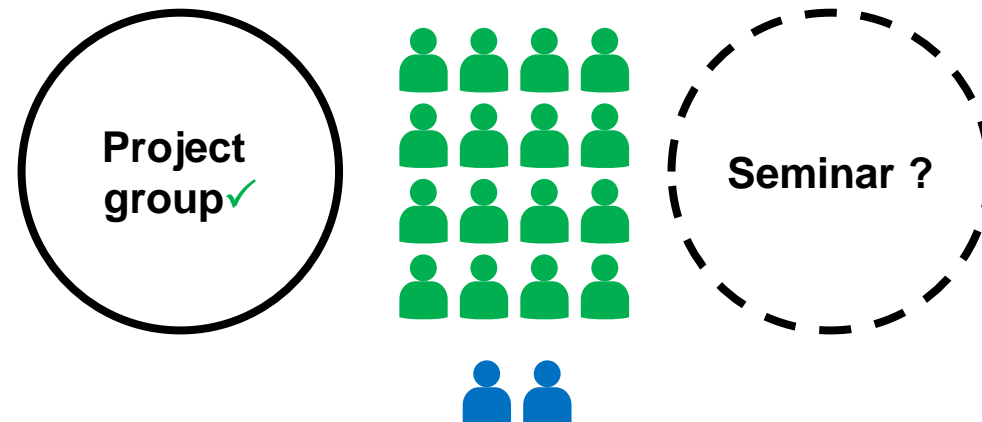
Seminar

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 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:

- **Phase1:** PAUL registration
August 17 - August 23, only **one week** !
- **Phase 2:** Assignments & Preferences
August 27 - September 30
- **Phase 3:** Stable Marriage
October 12 - 16
- **Phase 4:** Notification & Decision
October 19

- Advisor final grading: October 5 - 9

How to Get a Project Group

PAUL registration

Phase 1 – PAUL registration

- August 17 - August 23, only one week !
- You register only for one course:
“**L.079.07099 All Project Groups Winter Term 2020/21**”
- 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. This does not apply to the others)

How to Get a Project Group

Assignments & Preferences

Phase 2 – Assignments & Preferences

- August 27 - September 30

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

- August 27 - September 30

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

- August 27 - September 30

Consist of 2 steps:

Both Steps

- Where? → Tool chain by Jupyter and nbgrader extension
- You can log in starting on 27th 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

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 Winter Term 2020 !

How to Get a Project Group

Stable Marriage

Phase 3: Stable Marriage

- **October 12 - 16**
- The project group advisors score the assignments of the students with points (October 5 - 9)
- 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

- **October 19**
- 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 2020/21 to the actual course by PAUL administration

How to Get a Project Group

Notification & Decision

Phase 4: Notification & Decision

- October 19

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 me 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
English: "Application for admission to a course "
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