Project Group Presentation
Winter Term 2019/20
Master Computer Science & Master Computer Engineering

Matthias Fischer

- Monday, July 8th, 4:15pm,
- Rooms O1 and O1.258
Agenda

Joint Session for CE + CS Students

16:15  Why Project Groups? Registration and Requirements
16:30  Mixed Project Groups – Room: O1
After the last talk: CE students move to O1.258 CS students stay here

Parallel Sessions

17:35  CS Project Groups – Room: O1
17:35  CE Project Groups – Room: O1.258

Discussion Session

If you plan to take part in a group in Summer Term 2019, please stay here!
17:55 (CS), 18:25 (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 !!!

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)
<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Instructor(s)</th>
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<tbody>
<tr>
<td>16:30</td>
<td>Distributed Urban Drone Environment</td>
<td>Christoph Sommer</td>
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<td>Cooperative Mobile Systems</td>
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<td>16:40</td>
<td>Resource Allocation in disTributed Systems</td>
<td>Friedhelm Meyer auf der Heide</td>
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<td>Algorithms and Complexity</td>
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<td>16:50</td>
<td>Defining and Optimizing OpenCL Benchmarks for FPGAs</td>
<td>Christian Plessl</td>
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<td>High-Performance IT Systems</td>
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<td>17:00</td>
<td>Distributed Embedded Systems</td>
<td>Falko Dressler</td>
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<td>Distributed Embedded Systems</td>
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<td>17:10</td>
<td>Digital Tools for Strategic Planning</td>
<td>Roman Dumitrescu</td>
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<td>Advanced Systems Engineering</td>
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<td>17:20</td>
<td>intEr- and iNTra-domAin Network function chaining in multi-cLoud Environment</td>
<td>Holger Karl</td>
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<td>Computer Networks</td>
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<td>Time</td>
<td>Project Group</td>
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<td>17:35</td>
<td><strong>CS Project Groups (2x10 ECTS)</strong></td>
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<td><strong>Knowledge Graphs</strong></td>
<td>Data Science, Axel Ngonga</td>
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<td>17:45</td>
<td><strong>Data Science Suite</strong></td>
<td>Data Science, Axel Ngonga</td>
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<td>17:35</td>
<td><strong>CE Project Groups (2x9 ECTS)</strong></td>
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<td><strong>Disaster Response Robots</strong></td>
<td>GET Lab - Technische kognitive Systeme, Bärbel Mertsching</td>
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<td>17:45</td>
<td><strong>Signal Processing and Machine Learning over Acoustic Sensor Networks</strong></td>
<td>Communications Engineering, Jörg Schmalenströer</td>
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<td>17:55</td>
<td><strong>Reinforcement Learning for Electric Motor Control</strong></td>
<td>Power Electronics and Electrical Drives, Joachim Böcker</td>
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<td>18:05</td>
<td><strong>Brain sensing with EEG and signal processing</strong></td>
<td>Signal and System Theory, Peter Schreier</td>
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<td>18:15</td>
<td><strong>Design &amp; Implementation of a HexaPod</strong></td>
<td>Computer Engineering, Sybille Hellebrand</td>
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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

Tools
- git, JAVA, C++, UML, Android, Linux,....

Research Topic

Objective of the Project Group

self !

define

get knowledge of
Outcome

Project Group

Your 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

Download these slides:
www.upb.de/cs/pg
www.upb.de/cs/pgen
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

Download these slides:
www.upb.de/cs/pg
www.upb.de/cs/pgen
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)
- 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.
How to Get a Project Group
New Method to Match Students to Project Groups

New method consist of 4 phases:

- **Phase 1:** PAUL registration
  July 29 - August 4, only one week!
- **Phase 2:** Assignments & Preferences
  August 10 - September 15
- **Phase 3:** Stable Marriage
  September 23 - 27
- **Phase 4:** Notification & Decision
  September 30

- Advisor final grading: September 16 - 22
How to Get a Project Group

PAUL registration

Phase 1 – PAUL registration

- July 29 - August 4, only one week!
- You register only for one “virtual” project group: “L.079.07099 All Project Groups Winter Term 2019/20”
- 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 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](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

- August 10 - September 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
- August 10 - September 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
- August 10 - September 15

Consist of 2 steps:

Both Steps
- Where?
  Tool chain by Jupyter and nbgrader extension
- You can log in starting on 10\textsuperscript{th} August

For how many project groups should I take the test?

Recommendation
- Minimum: 3
- Better: 4 - 5
- More than five? → Waste of time
How to Get a Project Group
Stable Marriage

Phase 3: Stable Marriage

- September 23 - 27
- The project group advisors score the assignments of the students with points (September 16 - 22)
- 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!
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. “
How to Get a Project Group
Notification & Decision

Phase 4: Notification & Decision

- September 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 to the actual course by PAUL administration
How to Get a Project Group
Notification & Decision

Phase 4: Notification & Decision
- September 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)
Example: Past project group assignment summer term 2019

Number of submitted assignments

- If you do not submit an answer for a particular project group, you will be assigned a (very low) random score for this project group.
- So, in principle, you do not have to fill in any assignment, but that results in you being assigned to a random project group.
- You should do this only for project groups in which you will not participate under any circumstances.
**Example: Past project group assignment summer term 2019**

Result of registration in PAUL: **172 students**

Number of students assigned by the algorithm: **166 students**

5 students excluded: no preferences given

All CS seats except for 5 are full
Example: Past project group assignment summer term 2019

How many students got their
1st preference
2nd preference .... ?

Out of 166 students,
only 12 students reached
rank 5 or worse
**More Information, Webpages, Links, pdf Files**

**Main web page for project groups:** [http://www.upb.de/cs/pg](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](http://www.upb.de/studium/paul-info/formulare)

- **AND:** Send an email to PAUL to apply for project group’s registration