Panel Statement

Peter Marwedel
It is not sufficient to consider ES just as a special case of software engineering

EE knowledge must be available,
Walls between EE and CS must be torn down
# Bachelor CS Dortmund

<table>
<thead>
<tr>
<th>Input level</th>
<th>High school</th>
<th>Bachelor</th>
<th>Master</th>
<th>Practitioner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target degree</td>
<td>Bachelor</td>
<td>Master</td>
<td>PhD</td>
<td>Certificate</td>
</tr>
<tr>
<td>Educational approach</td>
<td>Classroom only</td>
<td>Classroom + lab</td>
<td>Lab</td>
<td>Project-based</td>
</tr>
<tr>
<td>Degree area</td>
<td>CS</td>
<td>ES</td>
<td>EE</td>
<td>Applications</td>
</tr>
<tr>
<td>Focus</td>
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ES Education at Dortmund

(Why not more programs like this?)

- Integrated as a special direction into CS curriculum

- Programming
- Algorithms
- Computer organization
- OS & networks
- Math education
- EE fundamentals

first course on embedded systems

+ courses for minor degree

control systems
DSP
machine vision
real-time systems
middleware
applications

lab
thesis
project

Lego, µC

undergraduate

graduate level
Structure of the CS curriculum at Dortmund - 3 year bachelor program -

<table>
<thead>
<tr>
<th>Term</th>
<th>Computer organization</th>
<th>Programming &amp; semantics</th>
<th>Math education</th>
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<tbody>
<tr>
<td>1</td>
<td>Circuits &amp; communication</td>
<td>OS</td>
<td>Algorithms</td>
</tr>
<tr>
<td>2</td>
<td>HW lab</td>
<td>Networks</td>
<td>SW lab</td>
</tr>
<tr>
<td>3</td>
<td>Databases</td>
<td>Software engineering</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Embedded systems fundamentals</td>
<td>Software engineering</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Bachelor project + Thesis</td>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>

All dependences met