

## Teaching Portfolio

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## Fundamental Pedagogical View

I believe in the constructivism theory from pedagogical perspective. I believe students can understand and learn knowledge, skills and competence only by reconstructing them from any external sources (textbooks, teachers or Internet) in their own "language" by themselves, not by anyone else. The roles and tasks of the instructors are therefore to motivate their interests (internal drive), provide necessary hints, tools and methods (scaffolding), and evaluate their performance (feedback). In my teaching and supervision practice, they are implemented through:

- Introduce enough background information before starting a specific topic, including the development history of a subject or topic, intuitive connections between theory and practice, and important applications in our daily lives.
- Introduce a "map" of a subject and provide a toolbox (a set of tools) for concerned questions.
- Encourage my students to do pre-reading before coming to classroom.
- Encourage individual reflection and group discussion (small groups) after I present an inspiring yet important question in a specific topic.
- Encourage discussion with me to get feedback after their own reflection and discussion.

In addition, I actively explore and utilize the research based teaching in mini-projects in courses, semester projects and thesis projects. I believe that the research based teaching and learning will greatly motivate students to deeply understand and reconstruct the learnt knowledge in a better and effective way, help them get a handle on the processes of how knowledge can be discovered and created, and therefore encourage them to pursue independent research activities in a postgraduate stage. In this way, the students will easily regard themselves as active learners or even researchers, which give them more momentum for active learning. In the context of Robotics where I am working on, I practice the research based teaching by two main approaches: 1) Question-driven approach: I pose several questions before they search for solutions to specific problems and give them clues and directions when they get stuck. 2) Comparative study approach: I provide them with several comparative research papers to let them realize the complexity of a problem and the flexibility of the possible solutions to it, and ask them to propose their own solutions based on their findings. These approaches can have them get an idea that even well-established frameworks can be contested and questioned if conditions supporting the frameworks are changed.

## Teaching Experience

### Mathematics and Digital Signal Processing (responsible for DSP module)

Fang, C.

06/09/2019 → ...

### Robotics: Fundamentals and Applications (summer school crash course)

Fang, C.

05/08/2019 → ...

## Supervision Experience

### Semester project of control of an inverted pendulum

Fang, C.

01/02/2021 → 31/05/2021

### Bachelor thesis project (for Thobias Moldrup Sahi Aggerholm)

Fang, C.

01/02/2021 → 31/05/2021

**Bachelor thesis project (for Christopher Nybo Ploug Hassø)**

Fang, C.

01/02/2021 → 31/05/2021

**Bachelor thesis project (for Carl Emil Sunesson)**

Fang, C.

01/02/2021 → 31/05/2021

**Semester project of Experts in Team Innovation**

Fang, C.

01/09/2020 → 31/12/2020

**Semester project of control of a pan-tilt system**

Fang, C.

02/03/2020 → 31/05/2020

**Bachelor thesis project (for Martin Androvich)**

Fang, C.

03/02/2020 → 31/05/2020

**Bachelor thesis project (for Daniel Tofte Schøn)**

Fang, C.

03/02/2020 → 31/05/2020

**Pedagogical Training**

2019-2020

Participation in a Lecturer Training Programme organized by University of Southern Denmark