23rd SUMMER SCHOOL
ON ENGINEERING DESIGN RESEARCH

ssedr '22
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ON ENGINEERING DESIGN RESEARCH

Week 1: Sun June 12th – Sat June 18th, 2022,   Dynamo Academy, San Marcello Piteglio (PT), Italy

Week 2: Sun July 31st – Sat August 06th, 2022, CIS de Champagne, Reims, France

Deadline for application: **Fri March 18th, 2022**

Latest notification of acceptance: **Fri April 8th, 2022**

CoViD-19 Note:

- Direct cooperation and communication is an important element of the Summer School on Engineering Design Research. Therefore, we plan to have a face-to-face event again in 2022.
- All lecturers and participants are required to comply with the current CoViD-19 rules in Italy and France, respectively, as well as the regulations in their home countries for the return journey. More information will be provided together with the travel instructions and will be regularly updated if necessary. **In any case, everybody attending SSEDR '22 must be fully vaccinated against CoViD-19 infections, including "booster shots"**!
- If the course takes place as intended, i.e. face-to-face, there will be no "hybrid" option (no online participation). However, the CoViD-19 situation in spring 2022 may still force us to change our plans and switch to an online event again (like 2021) – all participants will be informed about that no later than 30 days before the start of week 1.
- If the course cannot be run in face-to-face form and has to be switched to an online event, the dates remain the same, but the program and the fee will be changed accordingly.
- If you are unable to attend one of the weeks due to illness (COViD or otherwise) special arrangements can be made for you to attend SSEDR the next in 2023. Please note that reimbursement of already paid fees is not possible.

Aims of the Course

The aims of the Summer School on Engineering Design Research are to make PhD students who are working on topics related to Design Science better qualified and equipped for their research by (i) helping them develop a research approach, and (ii) encouraging discussion and collaboration.

The objectives are to provide the participants with:

- insight into existing design theories and models to enable the selection of a suitable theoretical foundation,
- an overview of design research methods to enable them to develop the most appropriate approach for their own research,
- an interactive environment in which individual research topics are presented to and discussed with other participants and the lecturers,
- the opportunity to get to know and learn from other researchers and develop long-term collaborations.

To achieve the objectives, participants are actively engaged in the Summer School: the emphasis is on discussions and exercises directly based around the research projects of the participants.

Prerequisites

The Summer School is suitable for PhD students who have decided on a research topic, have undertaken a literature study, have formulated first aims and objectives and have an initial plan of work. For a three-year PhD, this will normally be at the end of the first year, for a four- or five-year PhD, at the end of the second year.

Conditions of Participation

- The course language is **English**.
- The number of participants is limited to max. 20. Therefore, you have to **apply for participation**.
- In case of over-subscription the course organisers will select, based on the criteria stated in the prerequisites; in addition, the number of participants of a single research group may be limited.
- **Participants will have to attend both weeks.**

Dates, Venues, Hosts (travel details for both locations will follow)

Week 1:   Arrival Sunday, June 12th, 2022, afternoon; departure Saturday, June 18th, 2022, morning

Location: Dynamo Academy, San Marcello Piteglio (PT), Italy; https://www.oasidynamo.org/en/

Host(s):   Prof. Dr. Federico Rotini, Università degli Studi di Firenze, Italia, Dipartimento di Ingegneria Industriale, federico.rotini@unifi.it

Week 2:   Arrival Sunday, July 31st, 2022, afternoon; departure Saturday, August 06th, 2022, morning

Location: CIS de Champagne hostel, Reims, France; https://www.cis-reims.com/

Host(s):   Prof. Dr. Nadège Troussier, MSc. Estephania Delgadillo Jaime, Université de Technologie de Troyes (UTT), France, Institut Charles Delaunay, estephania.delgadillo_jaime@utt.fr

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If you are non-European, please check whether you need a visa for Italy and/or France!

Fee

The total fee including full-board accommodation is **1,450 Euro.** For members of the Design Society or candidates of institutes with a group membership the fee is **1,400 Euro**. Note that an associate membership in the Design Society is only 20 £/year, see www.designsociety.org.

The fee includes for *both* weeks: accommodation (from Sunday to Saturday in both weeks), all meals during the stay from supper on the day of arrival (Sunday) to breakfast on the day of departure (Saturday), refreshments during the breaks, hand-outs of the presentations, background material (provided via Dropbox), and the book "DRM, a Design Research Methodology". Only the costs of travelling and insurance are not included. The payment (credit card or bank transfer) will be processed by the Design Society – **after** you have received the acceptance mail. Detailed information about payment and the technicalities for uploading and downloading material will be shared in due time with the accepted students.

Programme

Week 1: Introduction of participants through presentation of their projects. The nature of design and design research. Concepts, models and schools of design and designing. The nature and use of theories in design and design research. Design Research Methodology (DRM) and examples of its use. Task clarification phase: Defining aim, context, phenomenon of own project; how to find the research gap; formulation of research questions/hypotheses for own project; establishing reference models; identifying areas of relevance and fitting in own contribution. Research types and placing own project into the research type matrix. First descriptive phase of design research: data collection & analysis, interpretation, drawing conclusions. Relating data collection methods to research questions/hypotheses. Systematic literature review.

Week 2: Refined reference models for own projects (continued from week 1, based on the homework). Prescriptive phase of design research: How to develop knowledge, methods, models, tools. Visualising main research object(s) of own project. Evaluating own research results (second descriptive phase). Iterative development of the support. Relationships between creativity, research and innovation. Research integrity; trustworthiness of research and research articles. How to write a thesis or other publications. Reviewing articles. Poster session and feedback on posters.

All topics are treated using a mix of lectures, discussions, exercises (applied to own project) and presentations of results. Results of discussions and exercises are summarised and distributed to all participants (via Dropbox).

Application

To apply, please sign up **before Friday March 18th**, **2022**, at the conference management system at:
>   https://www.conferencemanager.dk/ssedr2022/

Your application should contain:

- Your research topic (introduction to the problem to be solved, expected outcome, references)
- The progress you have made thus far (literature study, research questions, approach, etc.)
- Your affiliation (university name and address, PhD supervisor), your date of birth (for the certificate)
- The date on which you started your PhD and the year when you plan to finish

You will be notified by email **before Friday April 8th, 2022**, about your acceptance. After that, we will send further details about payment, program details, preparation, travel instructions, access to servers for upload and download, etc.

Certificate of Participation

All participants will be registered at the Technical University of Denmark, from which they receive an official participation certificate. The course leads to 5 ECTS points. Whether or not these points are necessary and recognised depends on each participant's university and PhD program.

Preparation and Homework

Preparation for Week 1:

- Participants are asked to prepare **a one-page (A4) written introduction** to their work containing:
  - Your research topic
  - Introduction to the problem to be solved
  - Objectives
  - Main research question(s)
  - Outline plan
  - Expected outcome
  - Your name, institute, supervisor and a picture of yourself

  This introduction is to be provided to all participants and lecturers **by June 03rd, 2022**, using the SSEDR 2022 Dropbox. (All accepted participants will be invited to the Dropbox for uploads and downloads in due time.)

- All participants are expected to download and read all introductions prior to the start of the Summer School and to bring copies of them (a binder will be provided by us).

- You are expected to **give a presentation of your work on the first day of the Summer School**. We ask you to attend to the following:
  - Prepare not more than three slides!
  - Limit your presentation to 5 minutes to allow for questions (we will only have 8 minutes in total to understand the project and clarify questions)
  - Include your name into the file name

- – We will use Dropbox to transfer your presentation (there will be one computer for all presentations that are to be held during the Summer School). Further information will follow
- Watch video lecture "Existing models and approaches of designing – an overview" as preparation for a related discussion during the course.

Preparation for Week 2:

- Refine the **Initial Reference Model** for your own project (instructions in the course)
- **Systematic literature review protocol** for your own project (instructions in the course, individual feedback will be provided by Daniela Pigosso)
- Please prepare **a short refresh presentation** ("elevator pitch" style; 3 min each) explaining:
  - – One slide about the research project as a reminder
  - – One slide on lessons learned or changes made since week 1
- Please prepare **a poster (A2 format).** This exercise is on how to present your project e.g. at a conference. Possible elements of the poster are (no need to stick to this – be creative!):
  - – Background/problem statement
  - – Goal and research questions/hypotheses and their relationships
  - – Your focus
  - – Research approach (why do you believe there will be a result?)
  - – Expected deliverables
  - – Your contribution
  - – Your name, institute, supervisor and a picture of yourself
- Please **upload the poster** to the SSEDR 2022 Dropbox **at the latest by July 22nd, 2022**.
- All participants are expected to:
  - – **Bring their own poster on A2** to week 2 of the Summer School for a joint poster session
  - – Download all posters
  - – Look at them (content, message, form)
  - – Bring a copy (A4) of all posters to week 2 of the Summer School

Final report after the course:

- Within two months (but not earlier than one month) after the course, the participants are requested to write a **short report reflecting on the course** and on the effects of the course on their own research.

Course Leaders, Contacts

- Prof. Dr.-Ing. Lucienne Blessing, Singapore University of Technology and Design (SUTD), Engineering Product Development pillar (EPD), lucienne_blessing@sutd.edu.sg
- Assoc. Prof. Dr. Daniela Pigosso, Technical University of Denmark (DTU), Department of Mech. Engineering, Section of Engineering Design and Product Development, danpi@mek.dtu.dk
- Prof. Gaetano Cascini, PhD, Politecnico di Milano, Italy, Department of Mechanical Engineering, gaetano.cascini@polimi.it
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Support:

SSEDR is endorsed and supported by:

www.designsociety.org

See you at SSEDR '22!　　**Lucienne, Daniela, Gaetano, Christian, Federico, Estephania**