Doctoral Position within the field of Construction and Technology at the Academy of Architecture of the Università della Svizzera italiana (USI)

Università della Svizzera italiana (USI) is a young and lively university, a hub of opportunity that is open to the world, where students are offered a quality interdisciplinary education in which they can be fully engaged, and where our researchers can count on having the space to freely pursue their initiatives. Established in 1996, USI is in constant evolution, always taking on new challenges while remaining true to its three guiding principles: quality, openness and responsibility.

At the Academy of Architecture in Mendrisio, a faculty of the Università della Svizzera italiana (AAM-USI), Prof. Dr. Ena Lloret-Fritschi aims to lay the foundation for a new sustainable design method for architecture using cutting edge technology with cementitious materials.

Prof. Dr. Lloret-Fritschi is a pioneer in the field of digital concrete, with the project Smart Dynamic Casting – a project that has led to a family of concrete processing technologies known as Digital Casting Systems (DSC). DSC controls the hardening of concrete on the fly of production. In doing so, it enables concrete construction using minimal formworks and thereby reducing the materials used. These new technologies and processes were developed in an interdisciplinary context at the ETH in Zürich - and the goal of the new professorship is now to understand how these novel concrete processing techniques can be better integrated into architectural practice. To achieve that, the Chair seeks to establish an iterative information flow between design, material, and fabrication, thus establishing a process which is efficient in terms of material, time and cost and which can be transferred to a range of building materials, including clay, earth, hempcrete, steel, and glass. The aim is to develop a material and fabrication agnostic design architecture to design buildings with less material.

Within this context we are looking for an excellent structural engineer with experience in the field of digital fabrication and/or non-conventional concrete structures. Your research will focus on developing structural systems and reinforcement strategies leveraging the cutting-edge technological advancements made in DSC. We aim to develop structural systems that (i) can be design with widespread mechanical principles and (ii) enable us to reduce up to 50% of the use of materials with respect to standard concrete structures. Your research will be embedded within the NCCR Digital Fabrication and be conducted in a collaboration with a highly interdisciplinary team. The doctorate will be co-supervised by the Group of Prof. Kaufmann at ETH Zurich, a structural engineer with wide experience on digitally fabricated concrete structures.

We are looking for a highly motivated structural engineer with a M. Sc. and a strong knowledge in computational design, digital fabrication and structural concrete design. We expect good programming skills, possibly in multiple programming languages (Python), and
experience in digital design workflows. Practical experience, either as designer or in R&D, as well as knowledge in the use of cutting-edge technology, is preferable. You should be fluent in English, be able to take the initiative and work independently and enjoy working in an interdisciplinary research team.

PhD applicants must hold a master's degree acquired at university level (equivalent to the FHEQ-Level 7) in civil engineering master degree.

General terms:
- 3-year contract (after trial period).
- Start date: upon agreement (latest Feb. 2023)
- Workplace: Academy of Architecture located in Mendrisio, Switzerland.
- Availability to travel to other parts of Switzerland and abroad (for purposes of collaboration and research) is required.

All applications must include:
- Motivation for submitting the application
- Max two-page research statement outlining areas of research the candidate would be interested in developing (in English).
- CV
  - Information about qualifications obtained
  - Professional experience
- Links to (English); examples of papers or texts that have been prepared for previous symposiums or conferences.
- Portfolio of work in academia and/or practice
- Educational and work certificates (last qualification obtained).
- At least two academic references

Applications must be compiled into one single pdf and sent to: ena.lloret.fritschi@usi.ch. NOTE application received in any other form will not be considered.

Applications received before 30.9.2022, 23:59 CET will be given priority.

A process of assessment will be followed by an invitation to interview. Interviews will start mid of October 2022.