Undergraduate Research Opportunity in Computational Topology Optimization
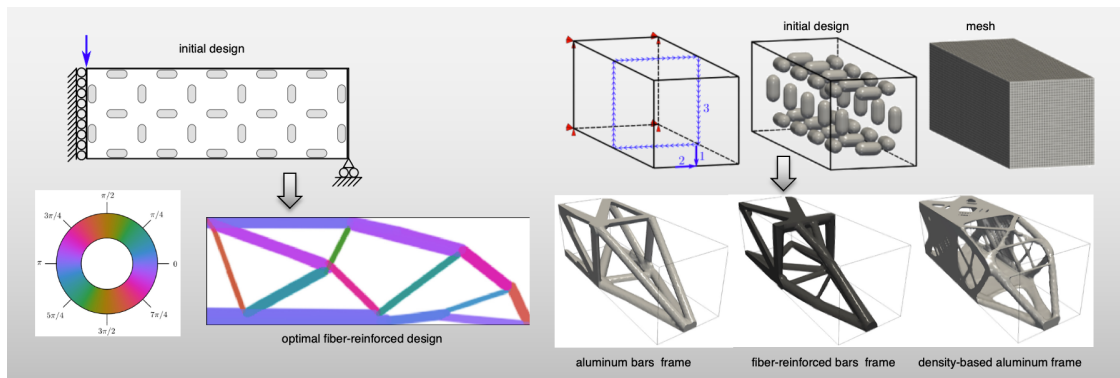
Structural Optimization Laboratory, Dept. of Mechanical Engineering, UConn

Do you like programming and computed-aided engineering and are interested in the formulation of computational techniques to design advanced structures? Our group has a research opportunity for *junior* undergraduate students to learn and apply topology optimization techniques for the design of advanced structures. The opportunity consists of the following:

- An **independent study in the Fall of 2022** under the supervision of Prof. Julián Norato on Finite Element Techniques for Structural Design. This course will focus on the use of off-the-shelf finite element software to design structural components and structures using software such as Altair Inspire and nTopology. This can be used as an ME elective.

- An **hourly paid UG research position in the Spring of 2023** (up to 10 hours a week) focusing on programming of topology optimization techniques, execution of numerical experiments and potentially 3d-printing of prototypes (using either a FormLabs Form3+ SLA printer or a MarkForged Mark Two fiber composite 3d printer). The student will participate in the group meetings of the Structural Optimization Laboratory and make a 20-minute presentation of their work in this meeting.

- An **internship in the Summer of 2023** at the Multidisciplinary Science and Technology Center at the Air Force Research Laboratory in Dayton, Ohio. Through this experience, the student will get the opportunity to interact with Air Force researchers and designers and learn about airframe design.

Depending on progress and desire to continue working on this field, an hourly paid UG research position will also be available during the student's senior year.

Eligibility:

- Required qualifications: the student must be a US citizen, be in good academic standing, and be planning to take in the fall of 2022 (or have taken already) CE 3110. The student must not be planning to take in the fall of 2022 (or have taken already) ME 4972 (Senior Design I).

- Preferred qualifications: strong programming skills and knowledge of Solid Works.

To apply, please send an updated resume and unofficial transcript to Prof. Julián Norato at julian.norato@uconn.edu by no later than August 31, 2022.