Force Vectors

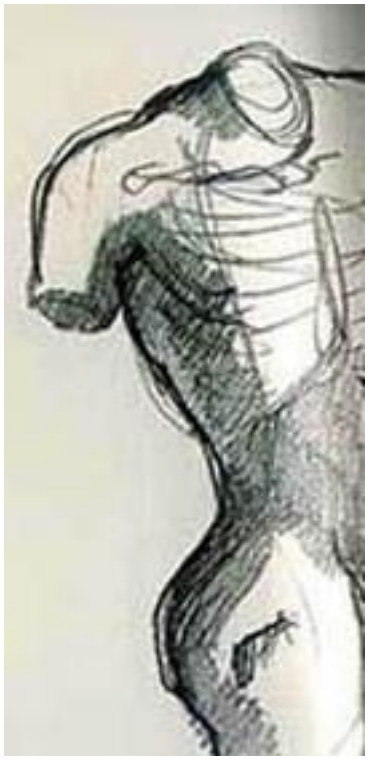
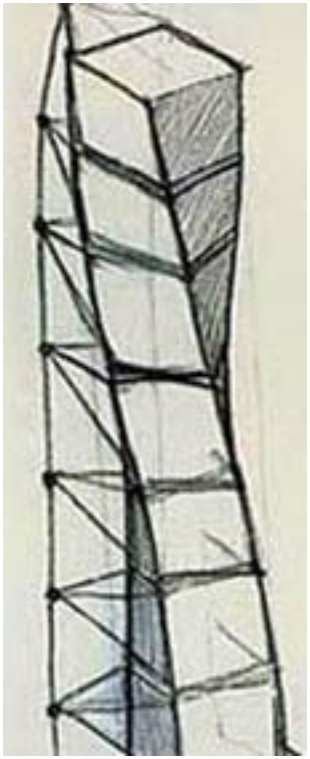
Santiago Calatrava
– Milwaukee Art Museum

CE 2301 – Statics
Lecture 002/Discussion 702
Spring 2022

Prof. Ting Lin
Department of Civil, Environmental &
Construction Engineering
Texas Tech University

Motivation

Statics is present everywhere, across scales and disciplines.

"Force Vectors": the concept of force and its mathematical representation

Journal of Structural Engineering

Guest Editors:
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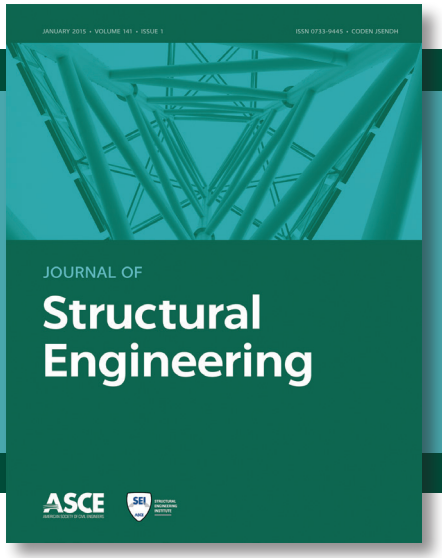
Call for Papers

Special Collection on Advances in Information Technology towards Vision for the Future of Structural Engineering



Aims & Scope

The purpose of the ASCE SEI Committee on Advances in Information Technology (AIT) is to identify, evaluate, explain, and advocate for new and emerging information technologies that can transform structural engineering in the future. This Special Collection is focused on advances in information technology towards vision for the future of structural engineering. This topic is motivated by discussions with the ASCE SEI AIT Committee, the 2017 inaugural resilient technology workshop with the National Academies of Sciences, Engineering, and Medicine (NASEM, 2020), and the 2019 confirmation and update of the SEI Vision related to technology and multi-disciplinary collaborations. Initial explorations of advanced technologies by the committee in 2015 include High Performance Computing (HPC), Artificial Intelligence (AI), and many more. HPC enables an unprecedentedly large number of computer simulations within a reasonable time frame. AI, with various techniques in machine learning and breakthroughs in deep learning, helps process and analyze data in a sophisticated manner. HPC coupled with AI offers new insight from hazard to risk assessments in structural engineering. As more and more structural engineers are adopting advanced technologies in research and practice, we invite all of you – engineers, scientists, technologists, and beyond - to join us in this Special Collection contributing to advances in technology for tomorrow's structural engineering in the face of climate change.

Topics of interest include but are not limited to:

- High Performance Computing (HPC) to accelerate structural engineering research and practice
- Artificial Intelligence (AI) including machine learning and deep learning
- Application of AI and HPC in day-to-day operations, disaster risk/resilience assessment, and uncertainty propagation
- Virtual Reality (VR) and Augmented Reality (AR) as visualization tools for community resilience
- Graphics Processing Unit (GPU) aided structural analysis and design
- Surrogate Modeling in performance-based engineering of structures and infrastructure systems
- Cyber-Physical Systems (CPS) for complex problems
- Advanced Remote Sensing (RS) techniques

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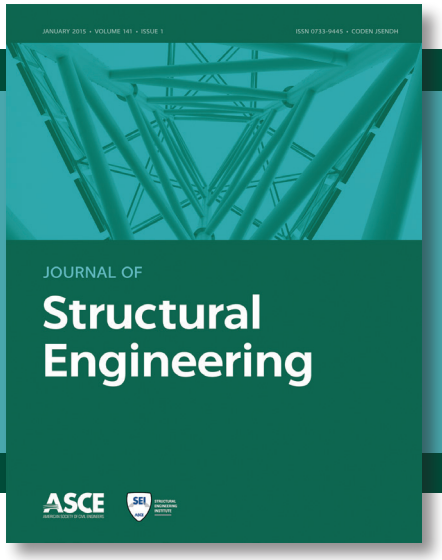

- Advances in Structural Health Monitoring (SHM) and Building Information Modeling (BIM)
- Emerging technologies for the future of structural engineering towards the SEI Vision
- Information Technology (IT) enabled innovation in the face of multi-hazards in a changing climate

Submission Timeline

January 15, 2022

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