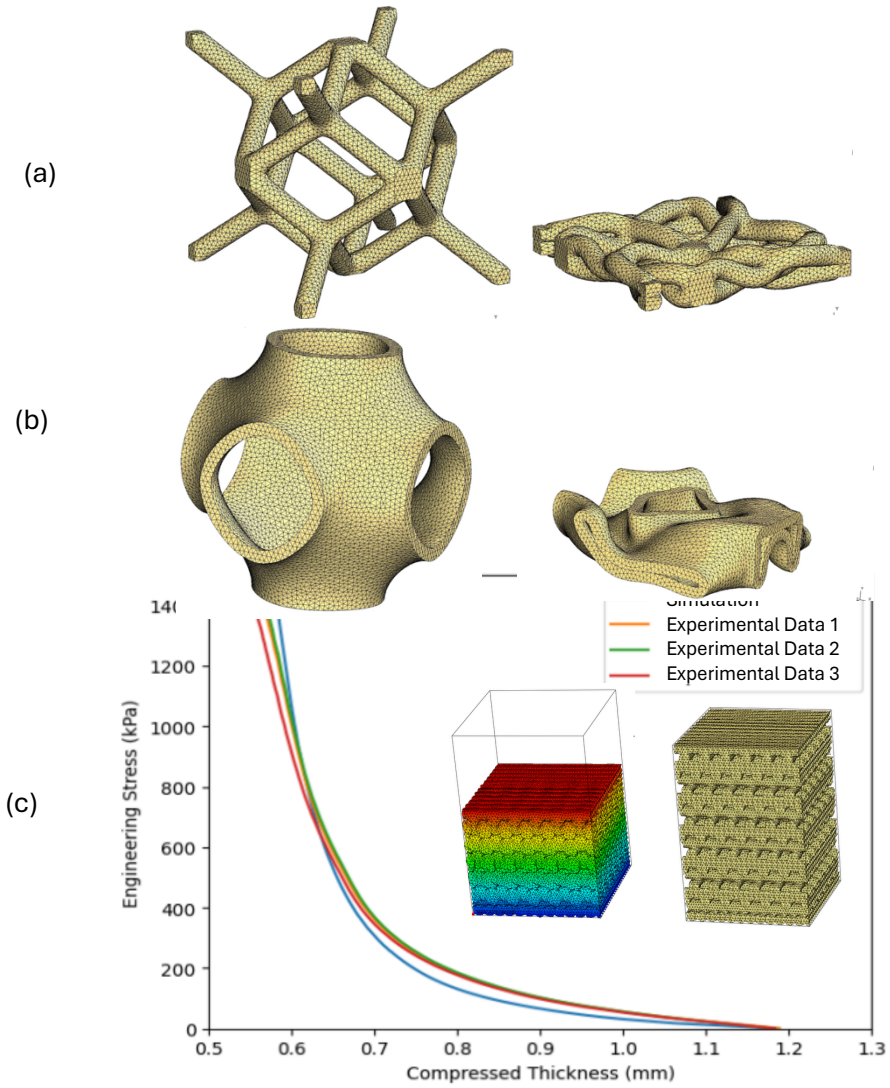
Where is contact now?
(a code developer's perspective)

Of course that is rhetorical question, its everywhere and typically a critical part of any complex mechanical model. But like many other areas of computational mechanics, it gets obscured by some of the current technical (and cultural) trends. In this talk, I will review some of the historical trends that influenced *me* as a code developer and how computational contact mechanics may fit in with the latest's trends of AI, GPU programming and Digital Twins. These trends seem unrelated to traditional areas such as contact mechanics, but I claim that these trends may offer new challenges for people working on contact methods in the areas of more robust/accurate solvers with the ability to handle larger and more complex analyses, computer science and more. In this talk, I will present some of the recent offerings from our lab which represent applications that could fit into this new technical world such as iterative linear solvers, optimization, geomechanics, energy consistent friction, architected materials and digital twins of direct ink written (DIW) polymers. Much of this work becomes multidisciplinary between mathematicians, CS folks and physicists who quickly come to appreciate the numerical complexity and challenges contact mechanics presents and the field of study.




Examples of unit cells for (a) the rhombic dodecahedron lattice (b) and TPMS (Triply Periodic Minimal Surface)–derived shell structure and (c) simulation of a uniaxial compression test compared to experimental results.