Abstract:

IFC (Industry Foundation Classes) is the commonly accepted data exchange standard for Building Information Models (BIM). However, the geometric representation in IFC is restricted to explicit, extrusion and CSG (Constructive Solid Geometry) approaches. Accordingly, the exchange of parametric geometry between parametric design applications used in the AEC (Architecture, Engineering and Construction) industry is not possible. This paper proposes an object-oriented data structure extending IFC-Bridge which supports parametric geometry representations, using geometric constraints and mathematical expressions to define dependencies between geometric entities and their dimensions. The extended data schema is implemented and evaluated with a real-world application scenario from the civil engineering domain.