

# Firmitatis, Utilitatis, Venustatis: Application of Computational Intelligence to Engineering Design problems in Architecture

Machi Zawidzki



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Over two millennia ago the Roman architect Vitruvius formulated the three principles of Architecture: 1. Durability (L. firmitatis) - it should stand up robustly and remain in good condition;2. Utility (L. utilitatis) it should be useful and function well for the people using it; and 3. Beauty (L. venustatis)- it should delight people and raise their spirits.Presently, the first two problems belong entirely to the field of Engineering Design, and the third one at least partially. Application of Computational Intelligence (CI) methods to these fundamental problems of Architecture is presented. The novelty of proposed solutions is based on the paradigm shift in the sciences caused by the introduction of "computation" in the middle of the XXth century and the resulting ability to effectively mimic natural heuristics for problem solving.

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