Computational Science, Art, and Society

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Summary.
Scientists and artists are creators driven by curiosity. Using different methods, they passionately create and communicate knowledge and emotions. With the advent of computational science, the scientific and artistic methodologies are continuously increasing in complexity. In this talk, Marius Stan discusses the interplay between science and art using computer simulation results and video clips from movies. The scientific approach is centered on multi-scale simulations, from atomic-scale, to meso-scale, to continuum. Data analysis is based on Bayesian Statistics and is enhanced by machine learning methods such as Kernel Ridge Regression, Bayesian Networks, and Evolutionary Algorithms. The second part of the talk details the changing role of computation in science and engineering, with examples from components of artificial intelligence such as machine learning, natural language processing and immersive visualization. The presentation ends with an evaluation of the impact of science and art on society.