

The Materials Genome Initiative and Artificial Intelligence

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Abstract: The U.S. Materials Genome Initiative is now in its eighth year. With a goal of accelerating the discovery, design, development, and deployment of new materials into manufactured products, the MGI is focused on the creation of a materials innovation infrastructure. The National Institute of Standards and Technology (NIST), has framed its support for the MGI around the need for a data infrastructure that enables the rapid discovery of existing data and models, the tools to assess and improve the quality of those data, and finally the development of new methods and metrologies based on that data. In partnership with agencies across the government, academia, and industry, these approaches are now yielding significant advances. Of particular note is the potential for machine learning and artificial intelligence applications upon these troves of data, which is now being borne out, and the vast consequent opportunities for new discoveries. The presentation will include a focused discussion on the special aspects of applying machine learning to physical phenomena, and the philosophical foundations of knowledge.