

SCIENTIFIC MACHINE LEARNING AT SANDIA: A SPOTLIGHT

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ABSTRACT

The Center for Computing Research (CCR) at Sandia National Laboratories performs research in Scientific Machine Learning (SciML) across a spectrum of multiscale, multiphysics application areas, including materials, additive manufacturing, multifluid plasmas, Earth systems, and more. Data-driven methods play a central role in reduced-order models for achieving unprecedented computational speedups, for bridging length scales, and for optimal experimental design. Our SciML research builds on our legacy of algorithms and high-performance software for optimization and uncertainty quantification. More specifically, credibility and trust are central themes in the research and deployment of our SciML capabilities. This presentation will be a spotlight on CCR's current research and challenges in the context of our broad suite of computational science application areas.