

Abstract Submitted
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Convolutional neural network-based modeling of an ultrafast laser¹ AASMA ASLAM, SANDRA GAIL BIEDRON, University of New Mexico, YONG MA, MURPHY MURPHY, MILOS BURGER, university of Michigan, MANEL MARTINEZ-RAMON, University of New Mexico, JOHN NEES, university of Michigan, SALVADOR SOSA, University of New Mexico, ALEC THOMAS, KARL KRUSHELNICK, university of Michigan, DOE COLLABORATION — We continue to see massive developments in the synergistic fields of particle accelerators and lasers. These beam sources have proven over and over to be essential tools for scientists, engineers, and technologists in many fields, including discovery science, medicine, environmental applications, energy application, and industry. Machine learning (ML) techniques to help the model and control of the laser beam for driving particle accelerators. We know from our experiences and the experiences of others that using advanced control techniques, including ML can often improve processes and machine performance. Our research is based on Convolutional-Neural-Network; as one of the classes of neural-networks. In this research, we report the Neural Network (NN) based on the feedforward-backpropagation control system to model the relationship between the DAZZLER inputs and the temporal pulse width of the femtosecond pulsed laser system.

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