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Training Neural Networks to See Beyond Missing Information M.E. HOWARD, L.J. SCHRADIN, J.A. CIZEWSKI, Rutgers University — While the human eye may easily see a distorted image and imagine the original image, a rigorous mathematical treatment of the reconstruction may turn out to be a programming nightmare. We present a case study of nuclear physics data for which a significant population of events from a microchannel plate (MCP) detector are missing information for one of four MCP corners. Using events with good data for all four MCP corners to train a neural network, events with only three good corners are treated on equal footing in the analysis of position measurements, recovering much needed statistics. As this neural network is available within the framework of standard physics analysis packages such as ROOT and PAW, implementation is quite straightforward. We conclude with a discussion of the obvious advantages and limitations of this method as compared with an analytic approach. Work supported in part by the National Science Foundation and the Department of Energy.

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