

A solar tracking neural network based adaptive controller is designed with the objective to keep the tracker perpendicular to sunlight at all times during the day. Available sun position data is modeled with artificial neural networks. The data contains information about time, azimuth angle and altitude. The time covers the full year range and it is incremented by 15 minute intervals. Due to the fact that the amount of data is huge, the data of the average day of January are only used to train the neural network. Adaptive techniques are utilized to adjust operation on other days. Furthermore, the neural net based adaptive controller corrects for modeling errors, environmental changes and system parts degradation. The adaptive controller operation is based on the Kaczmarz's algorithm. The designed control system performance is verified through computer simulation where the errors are plotted against time.