

## **Application of Low-order Modeling Techniques and Neural-Network Based Models for System Identification**

**Authors :** Venkatesh Pulletikurthi, Karthik B. Ariyur, Luciano Castillo

**Abstract :** The system identification from the turbulence wakes will lead to the tactical advantage to prepare and also, to predict the trajectory of the opponents' movements. A low-order modeling technique, POD, is used to predict the object based on the wake pattern and compared with pre-trained image recognition neural network (NN) to classify the wake patterns into objects. It is demonstrated that low-order modeling, POD, is able to predict the objects better compared to pretrained NN by ~30%.

**Keywords :** the bluff body wakes, low-order modeling, neural network, system identification

**Conference Title :** ICAIMEA 2022 : International Conference on Artificial Intelligence in Mechanical Engineering Applications

**Conference Location :** Venice, Italy

**Conference Dates :** June 16-17, 2022