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Modeling a Coefficient of Friction Applying Radial Basis Function

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Abstract: Nowadays, manufacturing industry search to maximize efficiency, quickness, and flexibility in their processes. The manufacture of parts for medical products and foodstuffs require a careful analysis of the reliability of its products due to its purpose such as medical prosthesis, food containers and so on. In that sense, it is important to have a prediction model of mechanical wear in order to make an accurate product foresight and assessment. The present work aims to investigate a Radial Basis Function neural network (RBFNN) for modeling the Coefficient of Friction. The tester used a sapphire pin under Ringer's solution on biocompatible 316L steel. All samples were characterized using metallographic techniques, scanning electron microscopy (SEM), micro hardness and roughness. The results show that the Radial Basis Function is able to model the Coefficient of Friction with excellent predictions. Furthermore, the Radial Basis Function neural network provides a good model for prediction according to statistical metrics.

Keywords: Wear, Coefficient of Friction, Radial Basis Function.