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Doctoral Dissertation

**Elucidation of physical similarity concepts  
by machine learning approach**

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# *Abstract*

Doctor of Philosophy

**Elucidation of physical similarity concepts by machine learning approach**

by Nguyen Duong Nguyen

Canonical similarity measurements in machine learning determine relationships among data objects over the description space to achieve efficient inferences. In contrast, in human recognition and materials science, the similarity between two objects depends on whether they follow a common mechanism/driven function. In this thesis, I illustrate the use of existing machine learning model as well as our developed methods to measure similarity–dissimilarity among data objects with respect to physical properties.

**Keywords:** machine learning, similarity measurement, material science, committee machine, theory of evidence