

MEALY-TYPE FINITE STATE MACHINES: A FUZZY APPROACH

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Abstract

In this paper, product of Mealy-type fuzzy finite state machines are defined. The generalized notions of homomorphism and covering between Mealy-type fuzzy finite state machines for distinct set of inputs and outputs are also introduced. The relationship between homomorphism and covering is established. To be precise, in relation to isomorphism and covering we have proved (1) Full direct (Cascade, Wreath, Cartesian) product and Sum of Mealy-type fuzzy finite machines are associative as well as commutative (2) Full direct product of Mealy-type fuzzy finite state machines is distributive over their sum, direct sum, wreath product and cascade product (3) Full direct product (Wreath product and Direct sum) of Mealy-type fuzzy finite state machines covers their restricted direct (cascade product and sum respectively) (4) Isomorphic Mealy – type fuzzy finite state machines covers each other.

Key Words : *Fuzzy finite automata; Mealy-type fuzzy finite machine; Homomorphism; Covering; Restricted product; Cascade product; Wreath product and Cartesian product.*