SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
Faculty of Engineering
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Area: Control, Intelligent Systems & Robotics

Host: Assoc Prof Prahlad Vadakkepat

TOPIC	**:**	**A Mixture-of-Experts Prediction Framework for Evolutionary Dynamic Multiobjective Optimization**
SPEAKER	**:**	**Mr Rambabu Rethnaraj** **Graduate student, ECE Dept, NUS**
DATE	**:**	**6 November 2019, Wednesday**
TIME	**:**	**10am to 11am**
VENUE	**:**	**E5-02-32, Engineering Block E5, Faculty of Engineering, NUS**

ABSTRACT

Dynamic multiobjective optimization requires the robust tracking of varying Pareto-optimal solutions (POS) in a changing environment. When a change is detected in the environment, prediction mechanisms estimate the POS by utilizing information from previous populations to accelerate search toward the true POS. To achieve a robust prediction of POS, a mixture-of-experts-based ensemble framework is proposed. Unlike existing approaches, the framework utilizes multiple prediction mechanisms to improve the overall prediction. A gating network is applied to manage switching among the various predictors based on performance of the predictors at different time intervals of the optimization process. The efficacy of the proposed framework is validated through experimental studies based on 13 dynamic multiobjective benchmark optimization problems. The simulation results show that the proposed framework improves the dynamic optimization performance significantly, particularly for: 1) problems with distinct dynamic POS in decision space over time and 2) problems with highly nonlinear decision variable linkages.

BIOGRAPHY

Mr. Rambabu Rethnaraj is a Ph.D. student at the National University of Singapore since 2016. He received his B.Eng. degree (First Class Hons) in Aerospace Engineering from Universiti Putra Malaysia, Malaysia, in 2015. His current research involves the development of evolutionary algorithms for solving dynamic multiobjective optimization problems and their applications to real-world optimization problems. His research interests include evolutionary optimization and machine learning.