

EISSN: 2146-0205

ANADOLU UNIVERSITY JOURNAL OF SCIENCE AND TECHNOLOGY A – Applied Sciences and Engineering



A - Applied Sciences and Engineering

Anadolu Üniversitesi Bilim ve Teknoloji Dergisi / A - Uggulamalı Bilimler ve Mühendislik

Volume: 19 / Number: 1 / March – 2018

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> > Indexed by DOAJ - Directory of Open Access Journals Indexed by EBSCO Indexed by ULAKBIM

> > > **ISSN:** 1302-3160 **EISSN:** 2146-0205



A - Applied Sciences and Engineering

Anadolu Üniversitesi Bilim ve Teknoloji Dergisi / A - Uygulamalı Bilimler ve Mühendislik

Volume: 19 / Number: 1 / March – 2018

Owner / Publisher: Prof. Dr. Naci GÜNDOĞAN for Anadolu University

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Books

Haupt R.L. and Haupt S.E. *Practical Genetic Algorithms*. 2nd ed. New York, NY, USA: Wiley, 2004.

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