

Accepted Manuscript

Genetic Fuzzy Schedules for Charging Electric Vehicles

Jorge García-Álvarez, Inés González-Rodríguez, Camino R. Vela, Miguel A. González, Sezin Afsar

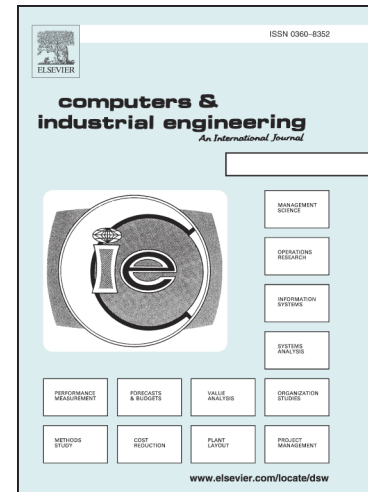
PII: S0360-8352(18)30220-1
DOI: <https://doi.org/10.1016/j.cie.2018.05.019>
Reference: CAIE 5225

To appear in: *Computers & Industrial Engineering*

Received Date: 6 February 2017
Revised Date: 27 April 2018
Accepted Date: 13 May 2018

Please cite this article as: García-Álvarez, J., González-Rodríguez, I., Vela, C.R., González, M.A., Afsar, S., Genetic Fuzzy Schedules for Charging Electric Vehicles, *Computers & Industrial Engineering* (2018), doi: <https://doi.org/10.1016/j.cie.2018.05.019>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Genetic Fuzzy Schedules for Charging Electric Vehicles

Jorge García-Álvarez^a, Inés González-Rodríguez^b, Camino R. Vela^a, Miguel A. González^{a,*}, Sezin Afsar^c

^a*Dept. of Computing, University of Oviedo, (Spain)*

^b*Dept. of Mathematics, Statistics and Computing, University of Cantabria, (Spain)*

^c*Independent researcher*

Abstract

This work tackles the problem of scheduling the charging of electric vehicles in a real-world charging station subject to a set of physical constraints, with the goal of minimising the total tardiness with respect to a desired departure date given for each vehicle. We model a variant of the problem that incorporates uncertainty in the charging times using fuzzy numbers. As solving method, we propose a genetic algorithm with tailor-made operators, in particular, a new chromosome evaluation method based on generating schedules from a priority vector. Finally, an experimental study avails the proposed genetic algorithm both in terms of algorithm convergence and quality of the obtained solutions.

Keywords: electric vehicle, charging station, scheduling, genetic algorithm, fuzzy number, heuristic

Acknowledgements

This work was supported by the Spanish Government [grant numbers TIN2016-79190-R, MTM2014-55262-P].

*Corresponding author

Email addresses: jgarcia-alvarez@outlook.com (Jorge García-Álvarez), gonzalezri@unican.es (Inés González-Rodríguez), crvela@uniovi.es (Camino R. Vela), mig@uniovi.es (Miguel A. González), sezinafsar@gmail.com (Sezin Afsar)

Download English Version:

<https://daneshyari.com/en/article/7541025>

Download Persian Version:

<https://daneshyari.com/article/7541025>

[Daneshyari.com](https://daneshyari.com)