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Manaus, 9th May 2019

Yogi Goswami

Editor-in-Chief

University of South Florida, Tampa, Florida, USA

Solar Energy

Please find enclosed our manuscript entitled as “Automated Formal Verification of Stand-alone Solar Photovoltaic Systems” by Alessandro Trindade (from Federal University of Amazonas) and Lucas Cordeiro (from The University of Manchester) which we would like to submit for publication in the Solar Energy journal. In our point of view, our work is aligned with three of the five aspects covered by the Solar Energy journal: research, development, and application; and that is the reason that we are submitting it to this reputed journal.

At the following four paragraphs, we tray to demonstrate the novelty of the paper and why the Solar Energy should publish it.

The present work, a full-length article (7,524 words), describes and evaluates a formal verification methodology for stand-alone solar photovoltaic systems, which employs the automated verification tool to check the most common type of renewable energy used in rural areas of developing countries or where grid extension is unfeasible.

The evaluation of PV systems is usually performed by simulation tools, which are well known in the market. However, the exploration of all design space state is impossible with those tools, and some flaws can be originated from the design phase, reaching the field, after the PV deployment. This can cause dissatisfaction to the PV system owners, and to the wrong conclusion that intermittent renewable systems are not good.

In our study, experimental results, from five case studies, in a comparative evaluation of tools, showed that only the automated verification can find some failures in the PV systems, and with the plus of indicating the reason of failure. That can and must be used to improve the sizing of solar PV systems.

Finally, based on the fact that only since 2017 papers are dealing with formal verification applied to PV systems, with excellent results, but only related to PV panels or to grid-tied systems, our study is unique and based on data from four months of use from the case studies: putting together mathematical models, automated verification, simulation, empirical observation and interview from dwellers in remote communities.

The authors claim that none of the material in the mentioned paper has been published or is under consideration for publication elsewhere. This paper is linked with the PhD Thesis from the main author, however the Thesis was not finished or defended yet.

As a list of recommended reviewers, with related research and papers at the same theme, we can indicate:

* Professor Alessandro Abate, from the Department of Computer Science of the University of Oxford (contact: [aabate@cs.ox.ac.uk)](mailto:aabate@cs.ox.ac.uk))
* Enrico Tronci, from Dip.to di Informatica Università degli Studi di Roma, “La Sapienza”, Italy (contact: [tronci@di.uniroma1.it)](mailto:tronci@di.uniroma1.it))
* Mimmo Parente, from Dip.to Scienze Statististiche & Innovation Systems (DISA-MIS), Università degli Studi di Salerno, Italy (contact: parente@unisa.it)

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Thank you for your time.

Sincerely,

