

# Comments and Corrections

## Corrections to “On the Decidability and Complexity of Diagnosability for Labeled Petri Nets”

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This note aims to correct a complexity result in our paper [1] that investigates the verification of diagnosability for unbounded Petri nets. The main result of [1] is Theorem IV.1, which shows that the diagnosability verification problem can be reduced to a Petri net model checking problem called Yen’s problem [2]. This main reduction is still correct. However, it was pointed out by Atig and Habermehl [3] that Yen’s original complexity result is not completely correct.<sup>1</sup> Specifically, they showed that (i) in general, Yen’s problem is still decidable, but it is as hard as the reachability problem, which corrects the original EXPSPACE-completeness claim in [2]; and (ii) for a special case called the increasing fragment, Yen’s problem can be solved in EXPSPACE.

In [1], we adopted the original complexity result in Yen’s 1992 paper [2], which is not correct. Since our formula in Theorem IV.1 does not belong to the increasing fragment, the following changes are needed.

- 1) In Theorem IV.2, the sentence “*Moreover, it is in EXPSPACE*” needs to be removed. We can only claim that verifying diagnosability is decidable. The corresponding claims in the abstraction, introduction, and conclusion also need to be revised accordingly.
- 2) In Theorem V.1, “*EXPSPACE-complete*” needs to be corrected as “*EXPSPACE-hard*.”

Finally, we would like to emphasize that all other constructions and proofs in [1] are still correct. Our paper [1] is still the first one that establishes the decidability of diagnosability for general unbounded Petri nets without any assumption on the unobservable net, which is the main contribution of [1]. Also, our proof for the EXPSPACE-hard lower bound in the paper still holds. However, the precise complexity class of this problem is still open.

### REFERENCES

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Manuscript received January 17, 2019; accepted January 27, 2019.  
Date of publication February 13, 2019; date of current version March 27, 2019.

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Digital Object Identifier 10.1109/TAC.2019.2897511

<sup>1</sup>We were not aware of the paper [3] when we wrote [1]. We are very grateful to Béatrice Bérard, Stefan Haar, Sylvain Schmitz and Stefan Schwoon for bringing [3] to our attention; they also mentioned this issue in [4].