

Errors found in my doctoral thesis *Patterns in Permuted Binary Matrices*

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Pages 46 and 47: Algorithm 10, Theorems 4.9 and 4.10 The reasoning in the proof of Theorem 4.9 has a flaw. The entry (r_3, c_3) used in the proof is assumed to have value 1 in the input matrix. Yet, it is possible that the entry has been flipped from 0 to 1 by Algorithm 10. There are matrices where Algorithm 10 generates a new switch box, which makes the resulting matrix non-nested.

An example: Given the matrix A below, Algorithm 10 transforms it to B , which contains a switch box.

$$A = \begin{bmatrix} 0 & 1 & 0 & 1 \\ 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 \\ 1 & 0 & 1 & 0 \end{bmatrix} \rightsquigarrow B = \begin{bmatrix} 1 & 1 & 1 & 1 \\ 1 & 1 & 0 & 1 \\ 1 & 0 & 1 & 1 \\ 1 & 1 & 1 & 1 \end{bmatrix}$$

Consequences:

1. The proofs for Theorems 4.9 and 4.10 are not valid. Both Theorems may still be true, but no proofs or counter-examples are known for them.
2. Tight examples (in the proof of Theorem 4.10) hold nonetheless.
3. Repeating Algorithm 10 will lead to a nested matrix. This works because a submatrix full of 1s is nested.
4. On page 48, the corrective move in Algorithm 11 can be implemented by repeating Algorithm 10 (instead of running it only once).
5. The rest of the thesis remains unaffected.