A Meta-Analysis of Metrics for Change Point Detection Algorithms

Matt Chapman

Universiteit van Amsterdam
Master Software Engineering

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Abstract, Abridged

- Change point detection algorithms are useful!
  - Manufacturing process control
  - IT infrastructure fault & intrusion detection
  - etc...
- Lots of approaches exist, using various test statistics, but:

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- Change point detection algorithms are useful!
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- Lots of approaches exist, using various test statistics, but:
- Which one is 'best' for a situation? How is this measured? Are the measures reliable?
- This thesis shows that established metrics behave inconsistently in many situations

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Research Questions

1. Are existing metrics in the field of change point detection effective and accurate?
    1. In what way are existing metrics deficient when applied to change point detection problems?
    2. Do existing metrics agree on the 'best' approach when used to evaluate change point detection algorithms applied to real-world data?
    3. Is there a metric more suited than the others, for the purpose of evaluating change point detections according to functional requirements set forth by the host company?
    4. What would an ideal metric for evaluating change point detection approaches look like?
    5. Do metrics show that change point detection is a reasonable and effective approach for the use-case of the host organisation?

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