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## **Understanding Offset Print Quality: A Computational Intelligence-based Approach**

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Abstract:

This thesis proposes a novel approach to automated print quality assessment in offset lithographic printing. Producing newspapers with acceptable and constant print quality is a non-trivial task. The strain on the economy makes, each printing house, forced to be as efficient as possible in the use of the available resources: paper, ink and printing press. Fewer service stops taken for maintenance makes it difficult to maintain a constant and high quality.

The offset lithographic printing industry therefore needs methods capable of assessing print quality online and providing quality evaluations that correlate well with the human judgements of print quality. In this work, to provide online print quality evaluations, quality attributes are computed from images, acquired online, of small standard measurement patches that are printed worldwide in newspapers. It is shown that print quality attributes can be aggregated to provide quality evaluations correlating well with print quality assessments made by a group of people. It is also shown that the developed, random forest based, decision support system is able to explain quality variations in terms of paper and printing press parameters.

Keywords: Random forests, Data mining, Print quality, Offset lithographic printing