Automatized Segmentation of Cracks in Solar Cells

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***Abstract*—**
***Index Terms*—Crack detection,**

I. Introduction

- Some basics and marketing
- State-of-the-art methods
- Many algorithms have been proposed for crack detection in Si-PV, but no standard or reference algorithm has been established so far
- The computer science standard to publish the code (use for comparison) is often not followed
- Aim of this work: establish a reference algorithm for scientific community which may be used as benchmark

II. Materials & Methods

- Samples
  - EL
  - Polycrystalline because more difficult for automatized segmentation
  - Number of images
- Preprocessing
  - Fourier Filtering
  - ROI of the solar cell
  - Noise-reduction filters

A. Crack Detection

- BP description (as one of the computer vision techniques used in industry)
- Vesselness
- Adapted Vesselness

III. Results and Discussion

- detection of ROI
- labeling in order to obtain performance result
- BP kernel size-threshold VS performance results
- Vesselness at different scales & threshold
- Adapted Vesselness results at various degree of asymmetries
- Final results of AV with a denoising filter

IV. Conclusion

V. References