Phat Wongcinda 2006: Design of Extensometer Using Image Processing Techniques. Master of Engineering (Industrial Production Technology), Major Field: Industrial Production Technology, Interdisciplinary Graduate Program. Thesis Advisor: Assistant Professor Taweedej Sirithanapipat, Ph.D. 120 pages.
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The objective and scope are designed the tensile tester (Extensometer), reviewed literature for methodology and international standards e.g. ISO, ASTM, NF. The experiment focused on natural rubber having tearing distance not over than 30 cm, using digital camera to grab frames of extension specimen. Then bring those motion clips calculate using image processing techniques to get extension parameter at each time for further strain stress calculation under international standards.

The atmosphere for data grabbing is initialized and the algorithms has been programmed and optimized to get the relation between extension and time under MATLAB environment. Percentage difference between the consideration of machine vision and human vision has been examined. The maximum percentage difference is 5.74%. The minimum is 1.36%. The average is 2.84%.

Seed location detected by image segmentation. The result of detection which derived from 1CCD and 3CCD digital camera doesn't have significantly difference. The main impact of experiment is environment and noise factors such as light intensity, brightness, light source, reflection, camera positioning, calibration, hardware specification and objective of image processing application.

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Student's signature

Thesis Advisor's signature

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