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Vincenzo Ferrara, Alessandro Farruggia |
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Method for Rapid Corrosion Detection on Pole Tips; 1.1. Introduction;
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Fusion; 1.3. Experimental result; 1.3.1. Distribution of corrosion; 1.3.2. Performance metric; 1.3.3. Robustness; 1.4. Conclusion; 1.5. Bibliography; 2: Nonlinear Filtering Method for Corrosion Detection on Pole Tips; 2.1. Introduction
 2.2. Perpendicular magnetic recording 2.3. Perpendicular magnetic recorder and corrosion; 2.3.1. Lubricant layer; 2.3.1.1. Perfluoropolyether (PFPE); 2.3.1.2. Overcoat; 2.3.2. Thermal effect results in corrosion; 2.3.3. Recording head/slider manufacturing and corrosion; 2.4. Length estimator for pole tip; 2.5. Nonlinear filtering as a corrosion detector; 2.5.1. Median filter techniques; 2.5.2. Median - Filter; 2.5.3. Corrosion detection procedure; 2.6. Application; 2.7. Conclusion; 2.8. Bibliography; 3: Micro Defect Detection on Air-bearing Surface; 3.1. Introduction; 3.2. Air-bearing surface
 3.3. Imaging system 3.4. Contamination detection; 3.4.1. Texture unit texture spectrum; 3.4.2. Gray level co-occurrence matrix; 3.4.3. Principle component analysis; 3.4.4. Identification defect; 3.5. Conclusion; 3.6. Acknowledgment; 3.7. Bibliography; 4: Automated Optical Inspection for Solder Jet Ball Joint Defects in the Head Gimbal Assembly Process; 4.1. Introduction; 4.2. Head gimbal assembly; 4.3. Vertical edge method for inspection of pad burning defect; 4.3.1. Inspection procedure; 4.3.1.1. Preprocessing; 4.3.1.2. Vertical edge detector; 4.3.1.3. Decision making
 4.3.2. Experimental result 4.4. Detection of solder ball bridging on HGA; 4.4.1. Solder ball bridging defect; 4.4.2. Chain code descriptor-based method; 4.4.2.1. Preprocessing; 4.4.2.2. Chain-code descriptor; 4.4.2.3. Similarity measurement; 4.4.3. Morphological template-based method; 4.4.3.1. Morphology and template matching; 4.4.4. Experimental result; 4.4.4.1. Result obtained by the chain code method; 4.4.4.2. Application of morphology and template matching method; 4.5. Detection of missing solders on HGA; 4.5.1. Image acquisition and enhancement; 4.5.2. Clustering of image pixels
 4.5.3. Decision making 4.5.4. Inspection result; 4.6. Conclusion; 4.7. Bibliography; 5: Analysis Methods for Fault Deformation of Solder Bump on the Actuator Arm; 5.1. Introduction; 5.2. Surface tension analysis; 5.2.1. Model analysis; 5.2.1.1. Symmetrical pattern; 5.2.1.2. Asymmetrical pattern; 5.2.2. Simulation; 5.3. Analysis of stress performance at different configurations of solder bump positions; 5.3.1. Analysis model; 5.3.1.1. Force analysis; 5.3.1.2. Stress and strain analysis; 5.3.2. Design and analysis using FEM; 5.4. Experimental result; 5.5. Conclusion; 5.6. Bibliography
 6: Artificial Intelligence Techniques for Quality Control of Hard Disk Drive Components

Sommario/riassunto

A presentation of the use of computer vision systems to control manufacturing processes and product quality in the hard disk drive industry. Visual Inspection Technology in the Hard Disk Drive Industry is an application-oriented book borne out of collaborative research with the world's leading hard disk drive companies. It covers the latest developments and important topics in computer vision technology in hard disk drive manufacturing, as well as offering a glimpse of future technologies.