DOI: 10.2352/issn.2168-3204.2016.1.0.100

Recent Activities of the Federal Agencies Digitization Guidelines Initiative Still Image Working Group

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2016 Still Imaging Guidelines

The Federal Agencies Digitization Guidelines Initiative, Still Image Working Group, will publish new digitization guidelines for still digital images in 2016. A draft is currently available on www.digitizationguilelines.gov. The Guidelines have been thoroughly updated to reflect advances in imaging science and cultural heritage imaging best practice.

Format:

The Guidelines are now arranged into task specific sections, each with parameters and guidelines that relate to the imaging type covered in that section. Not all parameters apply to each type of imaging, and not all sections have the same values for each star level. New to this revision of the Guidelines is specific advice on tools and techniques appropriate for each task.

The 2016 Guidelines will also be presented in a form that allows each section to be updated individually, and with hyperlinks to other relevant resources.

New material:

Provisional guidelines have been established for several new categories of imaging tasks. These provisional guidelines will become FADGI Guidelines once sufficient experience is gained in their use and needed adjustments to the specific recommendations have been made. Provisional guidelines will become permanent upon acceptance as final by the FADGI Working Group.

New Provisional Guidelines

- Paintings and other Two-Dimensional Art
- X-Ray Film (Radiographs)
- Printed Matter, Manuscripts and other Documents on Microfilm
- Newspapers

International Coordination:

FADGI has been collaborating with ISO and Metamorfoze to assure that digitization recommendations worldwide are in alignment with each other. Several changes to the metrics have been proposed and are being studied. FADGI is represented on ISO TC/42, the International Standards Organization committee charged with developing international standards for cultural heritage imaging. These new Guidelines have been reviewed by the ISO TC/42 committee, with the intent of formulating a unified international standard.

Simplification:

The Guidelines are easier to read and to implement in production. All material relevant to a particular imaging task is grouped in one place for easy reference.

Integration with DICE:

The Guidelines are now fully integrated with DICE (Digital Imaging Conformance Environment), the software analysis tool developed by FADGI to measure and monitor digitization performance. Conformance to the FADGI Still Imaging Guidelines now requires the use of DICE or OpenDICE process monitoring in combination with certified reference targets.

JPEG2000:

This revision of the FADGI Guidelines endorses the use of JPEG2000 as a master format for some imaging applications. Substantial research and testing has validated the use of this format under certain conditions. DICE testing is accomplished by decoding the JPEG2000 file to tiff and evaluating the tiff file in DICE or OpenDICE. This methodology accounts for both compression and decompression of the JPEG2000 file.

Color Measurement

The Library of Congress has reviewed current best practice for measurement of color. This included testing commonly used spectrodensitometers by measuring NIST-certified reference tiles with each device.

What we found…

There is a statistically significant variability between commonly used spectrodensitometers , even with new or freshly calibrated instruments. Given this limitation, we have concluded that without validating with a set of NIST-certified reference tiles, calibration accuracy cannot be assured to less than three delta.

This discovery has led to a change in the calibration methodology for DICE targets, and our understanding for the need of frequent recertification of the target measurements. These targets are now supplied with a QR code that contains color measurements from the specific chart, taken with a spectrodensitometer calibrated to the NIST reference.

OpenDICE

The Library of Congress has produced an open license version of the DICE conformance software, which will be available at no charge. OpenDICE duplicates the functionality of the current license-based DICE software, and provides expanded capabilities as well. OpenDICE is in test use now at the Library of Congress, and is actively being validated by LOC and Don Williams at Image Science Associates, who created the original DICE program under contract to the Library of Congress. Once past the test phase, the program will be made available free of charge to all by download from sites TBD. Dr. Lei He of the Office of Technology Policy at the Library of Congress will present on OpenDICE tomorrow.

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Targets

Research conducted by FADGI has identified the need for a new generation of color reference targets, for both profiling and process monitoring. FADGI is undertaking the creation of a new generation of color analysis targets, featuring enhanced gamut coverage, specific indexing to real world cultural heritage colors, and improved durability.

We have two research efforts underway.

The first effort involves creating a next generation profiling target using the concept of the Pointer's Gamut to define the visible color reflective spectrum, and measurements of hundreds of physical objects of interest in cultural heritage to define a sub set of this spectrum of interest in cultural heritage. This effort builds on previous work which introduced the concept of a near neutral target, expanding the concept to a broader range of colors commonly found in cultural heritage materials.

The second effort is producing a next generation DICE target, designed to be complimentary to the new profiling target. This new target will also be compliant with the new ISO 19264 specification currently under review.

Common to both efforts will be color reference patches produced of more durable and colorfast materials and measurement data traceable to the NIST reference.

These new targets will be compatible with both DICE and OpenDICE programs.

ISO Compliance

FADGI is represented on ISO TC/42, the standards committee charged with developing international standards for cultural heritage imaging. These new Guidelines have been reviewed by the ISO TC/42 committee, with the intent of formulating a unified international standard.

Statistical Process Control

The introduction of statistical process control to DICE conformance monitoring will enable organizations to view their imaging systems performance as a whole, rather than simply as individual systems. Additionally, tracking performance over time will provide management information essential to evaluating system performance individually and as a part of a larger community. Analysis of the information obtained can lead to workflow enhancements and process improvements, increasing both digitization quality and efficiency.

OpenDICE is being designed to provide this functionality. We envision the ability to plot the behavior of each individual imaging system to compare performance individually and as a part of a total system. At the Library of Congress, we are testing a piece of this new capability, documenting the performance of individual scanning systems on a daily basis, spotting and correcting issues before the systems drift out of compliance. This work also helps in the design of the FADGI Guidelines by informing us of the capabilities of many different imaging systems we monitor.

Biography

Thomas Rieger received his BFA from the Rochester Institute of Technology in 1974, and has worked in the imaging field in private, non-profit, and federal sectors. He is a member of the Technology Policy Directorate within Library Services and is the FADGI Still Image working group coordinator.