



6th Annual Short Course and Workshop on Computer-Assisted Image Analysis and Measurement June 24-27, 2008



Developed by Dr. John Russ (<http://www.drjohnruss.com>), this short course and workshop has been taught for over 20 years to more than 2000 students and has been hailed by attendees as the most effective and immediately useful course they have ever taken. Dr. Russ is a world leading expert in digital imaging processing and analysis for a variety of disciplines. Besides his extensive teaching background, Dr. Russ has authored several popular books, such as *The Image Processing Handbook*, *Image Analysis of Food Microstructures*, and *Forensic Uses of Digital Imaging*. Recently Dr. Russ co-published *Introduction to Image Processing and Analysis* with Chris Russ, President of Reindeer Graphics, developer of Fovea Pro, a set of plugins enabling Photoshop to be used for scientific imaging and measurement.

Although most participants attend to solve specific analytical problems, the workshop will lay the foundation not only to solve the problem at hand, but also to conceptualize future image processing and analysis situations. The course uses tightly coupled lectures and hands-on exercises covering a wide variety of methodologies and tools, through a set of step-by-step instructions to minimize the learning curve. Many examples used in the course involve light or electron microscope images, and students are invited to bring their own images (TIFF) for discussion and analysis.

This year's workshop will be expanded from 3 to 4 days. The first morning will begin with "An Introduction to Adobe Photoshop for Scientific Imaging" to serve as a primer for attendees with no experience using Photoshop and as a refresher for those for those who have not used it on a regular basis. The software is Adobe Photoshop with a comprehensive set of plug-ins from Reindeer Graphics. In addition, a few more hours added to the workshop will allow more time to complete lab exercises.

Image analysis and measurement methods are used in a broad range of applications and are generally concerned with extracting numerical data, such as the number, size, shape or location of objects from the image. In other cases, global structural parameters such as the volume and surface of structures are of interest. These measurements may require image processing to correct defects or enhance aspects of the image, comparison of multiple images, object recognition, or other steps. Ultimately, the image is reduced to the features of interest, which may then require further editing, for instance to separate touching objects. Algorithms for these procedures are described and provided for students to try, compare and understand.

Measurements on these individual features or on the image as a whole must then be obtained and interpreted in a proper stereological context to obtain useful data. Statistical interpretation of the data allows comparisons of different populations, understanding of distribution plots, and other inferences about the original objects. Structural modeling and geometric probability can be used to develop models for this interpretation. All of these aspects of image analysis are dealt with in depth during the course to stimulate proper imaging strategies to assure meaningful results.

Included in the course is a 500 page Image Analysis Tutorial CD with 300 images and course notes, a 30 day trial version of Fovea Pro 4.0, along with a 20% discount off the list price; all lunches and coffee breaks, a dinner banquet and opening reception; CEU credits.