UN-SCAN-IT Version 5.0 for Windows

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For long-time researchers who continue to refer to their personal libraries of printed graphs and individuals who need to reproduce spectra published in the literature, *UN-SCAN-IT* may provide a cost-effective method to migrate these hardcopy records to usable digital formats. *UN-SCAN-IT*, produced by Silk Scientific,[1] is designed to convert image data from scanned graphs and spectra into tabular form. Although the software does offer limited internal support for scanning, the use of dedicated third-party scanning software would appear to be the preferred means of obtaining digital images. Provided that the user has access to an image file of adequate clarity, however, the method of scanning is immaterial; the software recognizes a variety of popular digital formats including TIFF, BMP, PCX, JPG, TGA, GIF, IMG, and PICT. After loading an image into the *UN-SCAN-IT* interface, specifying the characteristics of the curve tracing algorithm, and defining the region of interest on the graph or spectrum—i.e., identifying the curve, discontinuities, and axes as well as providing values for the maximum and minimum gridlines—a set of (x,y)-coordinates is generated that approximates the points from the original curve. Data sets are saved as tab- or comma-delimited ASCII files that can be imported into most commercial data analysis and spreadsheet packages.

My initial experiences with the setup and functionality of *UN-SCAN-IT* were positive; there were no problems to report regarding the installation process. Within several minutes of use, the manner in which the program compensates for irregularities among digital images became apparent. Tilted images can be automatically righted, and difficulties arising as the result of graph complexity and layout issues are attenuated through the application of various tracing algorithms. For simple (e.g., single-curve, nonintersecting) graphs and spectra, the *Automatic Line Follow* setting is the most facile solution, and once initiated, this algorithm involves no additional user intervention. In instances where gridline or curve intersection would interfere with the automated tracing pattern, an *Automatic Line Follow with Pause Bars* setting can be applied to temporarily ignore any areas that would give rise to error. For increased control with complicated graphs, the *Semiautomatic Line Follow* setting allows the user to constrain the trace to a single curve within a particular tolerance. A *Manual Scan* setting, the software equivalent of a digitizing tablet, and a *Raster Scan* setting, allowing black-and-white images to be digitized, are also available. The remaining settings are variations of the previous algorithms: *Automatic Line Follow with Auto Turn Around*, *Automatic Line Follow with Quantized X*, and *Semiautomatic Line Follow with Auto Turn Around*.

Once the digitized data set has been generated, individual points can be graphed to quantitatively and qualitatively verify the reasonableness of the approximation. Within the graphing window, data points can be inserted or deleted, the curve can be smoothed, derivates can be plotted, and the resolution (i.e., the number of data points in the data set) can be altered via linear and cubic spline fitting algorithms. By default, *UN-SCAN-IT* uses the original image resolution to determine the number of data points that are generated; converting a single curve covering a horizontal distance of 5 in. within a 300 dpi image, for example, would generate 1500 data points.

Although the software is functional and affordable, the major criticism I have relates to both the interface and the documentation. *UN-SCAN-IT* does not possess the refined look-and-feel of typical commercial software products. From the perspective of a novice user, menu options are difficult to understand and are poorly arranged. Navigation between windows is confusing, as is the process of saving the current data set. In-program help resources and tutorials are nonexistent, and the online help consists of a single page of frequently asked questions.[2] Error messages are profoundly cryptic (e.g., "Bad File"). The user's manual, a loose-leaf stack of documentation rife with typographical errors, provides only the most basic information regarding the functionality of the software and troubleshooting. While evaluating this program, the software mysteriously crashed/ quit several times. *UN-SCAN-IT* appears to *perform* as intended—generating a tabular data set corresponding to the visual representation of a graph or spectrum—but the potential for *user frustration* within the software environment should enter into any purchasing decision.

The minimum system requirements for the Windows version of *UN-SCAN-IT* 5.0 are Microsoft Windows 3.x, Windows 95, Windows 98, or Windows NT; 8 MB RAM; 2 MB hard disk space (16-bit)/8 MB hard disk space (32-bit); a VGA graphics monitor; and a scanner or other comparable imaging device. The Macintosh version of *UN-SCAN-IT* 4.2 (not reviewed) requires the following: Macintosh system software version 6.0 or higher; a Macintosh compatible scanner or image input device; and a 256-color or higher graphics monitor. This review was written using the Windows version of the software, and it was evaluated under Microsoft Windows 98 running on a 566 MHz Intel Celeron processor and 64 MB of RAM. Windows and Macintosh versions of *UN-SCAN-IT* are each available for $345 plus $10 shipping and handling, and demonstration versions of the software are available for download from the Silk Scientific Website.[3]

REFERENCES AND NOTES

(1) Silk Scientific, Inc., P.O. Box 533, Orem, UT 84059; phone: (801)-377-6978; fax: (801)378-5474; e-mail: jesilk@silkscientific.com; Website: http://www.silkscientific.com/.
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