XPIP 2.2: X Portable Interface Package*

GREGORY W. LESHER**
Enkidu Research, Inc., 12 Skycrest Drive, Rochester, NY 14616, USA

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Abstract—Psychophysical researchers often need to vary stimuli parametrically during experimental design. The X Portable Interface Package, a set of free software libraries for X-Windows, provides a suitable platform for quickly prototyping visual stimuli and administering simple experiments.

The X Portable Interface Package (XPIP) is a freely available development tool which allows application programmers to quickly construct graphical user interfaces (GUIs) in an X-Windows environment. Designed for use on Unix workstations, the XPIP interface takes the form of a series of user-definable 'widgets'—buttons, sliders, dials, etc.—which applications employ for varying parameters, control flow, input/output, and other alterable processes. Although not as comprehensive as other freeware and commercial GUI packages for X-Windows, such as xtoolkit, Motif, and TKL/TK, XPIP provides a balance between ease-of-use and technical sophistication that makes it appealing for the more casual programmer. The use of only standard X11 libraries (no toolkits) maximizes the portability of the system.

The primary applications of XPIP to psychophysical studies, the domain for which the tool was originally developed, are the rapid prototyping of experimental stimuli and the administration of simple forced-choice, matching, and rating-scale experiments. For the researcher with a modest knowledge of C programming and familiarity with the standard XLib drawing commands, it is a straightforward process to define a series of XPIP widgets and control code that determine the exact appearance of on-screen stimuli. Similarly, for performing actual experiments, XPIP can be configured to present pre-defined stimuli and solicit user inputs. Figure 1 depicts an XPIP application for manipulating various aspects of an illusory contour configuration, including inducer luminances, number of inducers, and spacing between elements.

XPIP should be used only for presentation and manipulation of static stimuli, such as the illusory contours of Fig. 1. Because of the synchronous update method employed, the system is not appropriate for experiments involving motion, rapidly changing stimuli, precise timing, or exceedingly complex stimuli such as realistically rendered

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**lesher@cns.bu.edu
Figure 1. The contour application, available from the XPP web page, allows the user to interactively manipulate stimuli which generate illusory contours.