



COOL IMAGES

Do a Double Take

If you're going to rob a bank, wear a wig. That bit of practical advice comes courtesy of an online exhibit on face recognition from the Exploratorium*, a San Francisco science museum. When identifying faces, people rely more on cues from the top half of the face, particularly hair, than the bottom half—so a good Elvis toupee might keep you out of jail. Other exhibits feature classic perceptual illusions, such as afterimages from staring at a strange-colored flag, funhouse 3D distortions, and the old "is it a vase or a face?" illusion. Try to spot the animals in a camouflage sideshow, decide which dot is darkest, and play duck calls that turn into vowel sounds. The exhibits aren't just parlor tricks; each one explains a property of the visual or auditory system that allows it to be fooled.

*www.exploratorium.edu/exhibits

NET NEWS

Complex Signals

Physiological processes can be a bear to measure and evaluate. Everything from heartbeats to brain activity during sleep can generate nonlinear, wildly fluctuating patterns of data. A new site called *PhysioNet** aims to standardize how physiologists make sense of the mayhem.

"The goal is to do for physiology what GenBank did for molecular biology," says project director Ary Goldberger of Beth Israel Deaconess Medical Center in Boston. Researchers register DNA sequences with GenBank whenever they publish a paper; likewise, Goldberger hopes that physiologists will make their data recordings and analysis algorithms available for the rest of the field to evaluate.

The site, sponsored by the National Institutes of Health, includes a bank that stores recordings, such as brain activity in epileptics, gait patterns, and cardiovascular data from people at risk for sudden cardiac death. Complementing the bank is a tool site, where researchers share and compare their software and analysis models. The site is hosting a contest for the best algorithm to detect evidence of sleep apnea in cardiac signals. A few online tutorials coach newcomers on the uses and limitations of various techniques.

Many disagreements in the physiology community—such as whether certain types of cardiac activity are chaotic or periodic—arise because people work on relatively restricted samples, says Goldberger. But he hopes that "if we meet as a community over common data sets, lots of disagreements can be resolved."

*www.physionet.org

NETWATCH

edited by LAURA HELMUTH

HOT PICKS

Re: Fwd: DO NOT DELETE!!! For the last time, Disney World is not giving away cash or prizes to people who forward an e-mail message, a Budweiser frogs screen saver will not devour files on your hard drive, and Blue Mountain electronic greeting cards do not crash your system. Instead of forwarding virus warnings or chain letters, consult an Internet hoax site for the real skinny on these endlessly circulating myths. www.ciac.org/ciac/CIACHoaxes.html [or] kumite.com/myths

Take it from the experts. Toss those faded textbook tables—all the chemistry info you need, updated and easily searchable, is on the National Institute of Standards and Technology's Chemistry Web Book. Search for chemical species by about 20 different properties and find everything from enthalpies of reaction to UV spectra. webbook.nist.gov/chemistry

Animal, vegetable, or mineral? Play a game of 20 questions with a neural net that has been learning about the world from its human playmates for more than a decade. You can watch the net think as it assigns probabilities to possible solutions; afterward, it tells you whether your conventional wisdom differs from that of others who have played. www.20q.net

SITE VISIT

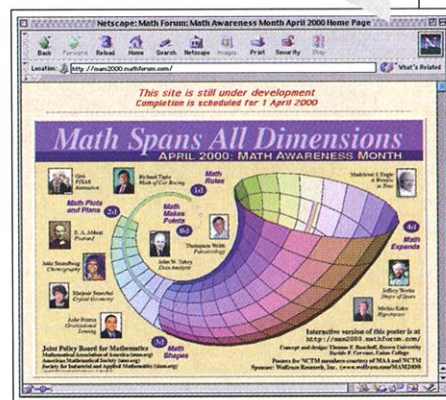
The Nth Dimension

Celebrate Mathematics Awareness Month by exploring an electronic poster that presents a cornucopia of math links, games, and fun facts. This year's theme is "Math Spans All Dimensions," so the site, hosted by the Joint Policy Board for Mathematics, naturally includes a page devoted to Edwin Abbott's classic book, *Flatland*. The beautifully written introduction to multidimensional spaces describes the travails of a two-dimensional square creature, and it's also a pointed satire of Victorian society. The full text is just a click away.

Other mind-bending features test your grasp of multidimensionality. Mathematician Jeffrey Weeks, famed for trying to determine the shape of the universe, has a page devoted to tilings, the science of covering surfaces with like-shaped tiles, and other geometric oddities. Fancy yourself a chess whiz? Play on a doughnut-shaped board, and the computer will likely trounce you. Worse yet, you can try playing on a Klein-bottle—a surface in four dimensions that has neither inside nor outside.

Four dimensions are child's play for theorists who regularly deal with infinite-dimensional spaces, but to ordinary mortals, a Java applet that allows you to rotate a hypercube in four dimensions might give a glimpse of higher dimensional spaces.

mam2000.mathforum.com



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