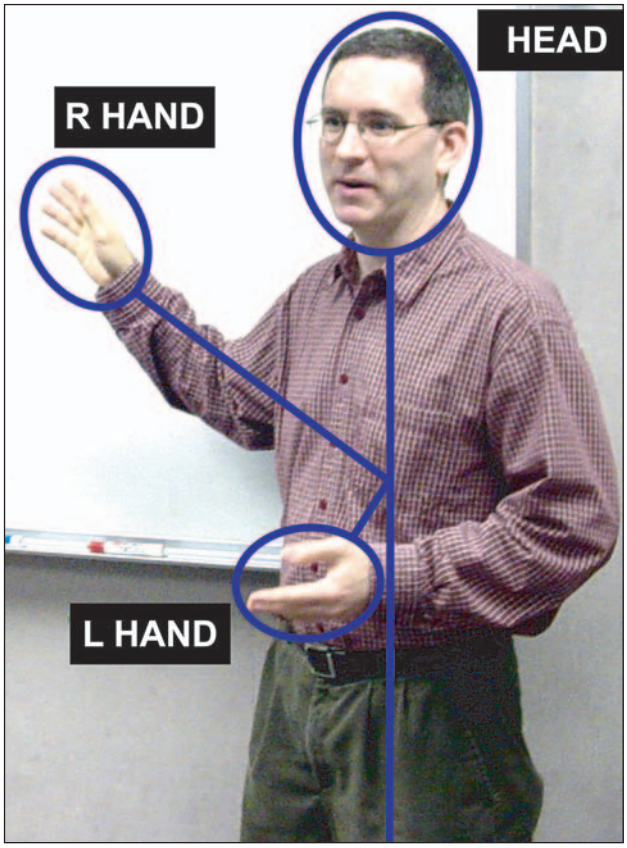
Advancing Technologies for Internet Video

Ohio State University engineers are using video recordings of comedian Jay Leno and other TV personalities to test software that transmits more information in an Internet video using less bandwidth. The results could improve distance learning on the Internet.

One of the obstacles to online learning is the difficulty with viewing lectures, explained **James Davis,** professor of computer science and engineering. A high-resolution video of a speaker takes too long to download, but a low-resolution video makes fine details such as the speaker's face and hands appear fuzzy.



An example of how software developed by College of Engineering researchers located James Davis's face and hands to enhance those parts of the video

"When we communicate, we say a lot with our face and hands," Davis said. "Our voice, gestures and facial expressions are all intertwined. If I'm watching a lecture and I'm trying to learn something, I need to be able to see the speaker's face and hands."

He and his students created software that zeroes in on a speaker's face and gesturing hands and sharpens the image in just those spots, while slightly lowering the resolution of the rest of the image. They inserted their algorithms into a publicly available MPEG encoder — the software that compresses video for efficient digital transmission on the Internet — and an MPEG decoder that converts the digital signal back to video so a user can view it on their computer. The final video communicates more information without increasing bandwidth.

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Check out the full article at http://researchnews.osu.edu/archive/facevid.htm.

Environmentally Safer Catalyst Aids Hydrogen Production

Around the world, researchers are working to develop fuel cells, devices which would use chemical reactions to produce electricity. Cars are a prime target for this technology, and experts believe the type of fuel cell best suited to cars is one that runs on hydrogen.

Ohio State engineers have developed a chemical catalyst that increases hydrogen production without using a toxic metal common to other catalysts.

"Hydrogen is the ultimate fuel," said **Umit Ozkan**, professor of chemical and biomolecular engineering, who is leading the research. "At the same time, we have very large coal reserves. If we could somehow go from coal to hydrogen, we could put those reserves to use in a new way."


Ozkan

Though the new catalyst is still in the early stages of testing, it could represent an important step toward using the nation's coal supply to power alternative fuel vehicles and equipment.

The catalyst uses a combination of iron, aluminum and other metals to harvest hydrogen from carbon monoxide and water, explained Ozkan. In tests, the catalyst performed up to 25 percent better than a commercially available alternative.

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Read more about the catalyst at http://researchnews.osu.edu/archive/newcat.htm.