NHK shows downsized Super Hi-Vision video camera

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(Phys.org) -- NHK this week placed on exhibit a shoulder-mount camera, developed in cooperation with Hitachi, capable of shooting what NHK calls super high vision (SHV) video in 7680×4320 resolution. Super Hi-Vision is NHK's preferred name for ultra high definition television (UHDTV). The powerful prototype was part of NHK Scientific & Technology Research Laboratories (STRL) Open House event in Japan earlier this week. The camera is an innovative development, as a compact Ultra High Definition camera using a single-

chip color imaging sensor to produce “closest to being there” video. NHK says that the compact head is compatible with commercially-offered still camera lenses.

The prototype is the result of the NHK researchers’ investigation to see if they could produce a portable, lighter-weight Super Hi-Vision camera. They achieved their goal, with the size, weight, and shape of their prototype camera head similar to those of current high-definition broadcast cameras.

They found the answer using single-chip color imaging, drawing on results they got in earlier studies. “Single-chip color imaging” refers to a system for acquiring color images with only a single image sensor chip. The single chip sensor uses the Bayer color filter array, so that only one color component is acquired per pixel. An NHK technique involving an “up converter” estimates the other two complementary colors to turn the output into full-resolution video. In turn, NHK has succeeded in showing it is possible to construct a camera creating video with a resolution equivalent to SHV for each of the RGB colors through its up-conversion technique.

In detailing the process, NHK’s STRL said the upconverting is applied to each frame recorded. First, it is conducted for the G color, which uses more pixels than any other color. The process interpolates pixels based on the correlation among sets of six missing pixels of each of the longitudinal and lateral lines. Then, based on the obtained green image, an estimation is made for the red and blue pixels.

Next on the research to do list, says NHK: “We hope to improve picture quality and functionality by developing a camera control unit that performs signal processing specifically for this camera head.”

NHK’s R&D will have another chance to brand itself as ahead of the

broadcast technology game during the 2012 Summer Olympics in London, putting Super-Hi Vision to work on public screenings. Opening and closing ceremonies will be among the events filmed by cameras recording 16 times the detail of high definition. In 1964, NHK R&D began on a Hi-Vision (HDTV) system, the same year of the Tokyo Olympic games.

More information: via DigInfo