

GEEK LIFE / PROFILES

FEATURE

Dream Jobs 2012: Web Guru for the Blind

IBM researcher Chieko Asakawa can't see your website, but she can make it better

By ELIZA STRICKLAND / FEBRUARY 2012



Photo: Makoto Ishida

**CHIEKO ASAKAWA**

IEEE MEMBER

AGE 52

WHAT SHE DOES

Develops software programs for visually impaired computer users.

FOR WHOM

IBM Research

WHERE SHE DOES IT

Tokyo

FUN FACTORS

Travels the world to meet collaborators; opens up online frontiers for herself and others; gets to tell hotshot Web designers how lousy their pages are.

Chieko Asakawa has just given the *IEEE Spectrum* website a once-over, and the verdict isn't good. Her software program has declared that the site is neither operable nor understandable, and it has decorated *Spectrum's* home page with a series of red frowny faces. "I'm afraid it's pretty bad," she says regretfully, smiling to soften the blow.

Asakawa isn't talking about what the site looks like—for someone who navigates the site visually, it's a nicely organized wealth of information. But for Asakawa, who is blind, it's a mess.

She uses an audio Web browser that reads content aloud, and on *Spectrum's* home page it bogs down in category headings and subheadings, taking minutes before it finally gets to an actual article headline. That's not unusual, says Asakawa; many of the Web's wonders are still inaccessible to the visually impaired. But Asakawa has done her best to change that through her work at the [Tokyo branch of IBM Research](#), where she has devoted herself to improving blind people's access to computers and the Web for 27 years.

What began as a personal challenge grew gradually into a globetrotting career, as a blind Osaka teenager became a cosmopolitan woman who knows the New York City subway system from top to bottom. In her plain, unornamented office, the elegant Asakawa toys with the string of pearls around her neck and starts her story at the beginning.

She was born with normal vision and harbored early dreams of becoming an Olympic athlete. But Asakawa's world began to darken at age 11, when she hit her eye on the side of a swimming pool, damaging her optic nerve. She was completely blind by 14, and her future seemed constrained. At that time in Japan, many blind people were routed into careers in massage or acupuncture. "I didn't want someone else to decide my job," says Asakawa. "So I made it my goal to find a new type of job as a blind person." After getting a bachelor's degree at [Otemon Gakuin University](#), in Osaka, where she majored in English literature, she heard about a two-year computer course for the blind and signed up.

It was 1982, the twilight of mainframe computers and punch cards. Asakawa learned to program by mastering a torturous device called the [Optacon](#), which used a camera to transmit the letters in a printed document, one by one, to a grid of tiny rods that formed the shape of each letter beneath her fingertips. She found the process excruciating, but she says there's a Japanese word for people like her: *makezugirai*. It means a stubborn character, or as Asakawa puts it, "someone who doesn't like to lose!" Sticking out the computer course led to a one-year position at IBM Research in Tokyo, which quickly evolved into a staff research job.

Times were already changing when Asakawa started at IBM in 1984: Personal computers were taking off, the first Braille printer was on the market, and an in-house IBM team had just developed a voice synthesizer that allowed Asakawa to read e-mail and write code much more easily. For her first IBM project she developed a digital Braille editor, which replaced clunky Braille typewriters with a modern word processor. Next she rolled out a network that allowed Braille libraries to upload and share documents and books (at a then dazzling but now quaint speed of 300 bits per second).

Asakawa's position on IBM's technical team gave her direct access to the personal computing revolution under way. And with each upheaval, Asakawa found a new challenge. When a colleague set up a system that allowed Asakawa to browse the Internet in the mid-1990s, she embarked on her mission to bring the Web to blind people everywhere.

By 1997 she had developed a plug-in that worked with the Netscape browser, mapping Web navigation commands to the computer keyboard's number pad and using text-to-speech technology to read out content. Computer stores around the world sold [IBM's Home Page Reader](#), and Asakawa says its effect on the blind community was immediate, electric, and sometimes touching. During one training session for new users in Japan, she remembers a 70-year-old woman who asked for help searching for health insurance for the elderly. "She knew such information was available on the Web, but she couldn't get it by herself," says Asakawa.

Other browsers for the blind followed IBM's groundbreaking efforts, and Asakawa moved on to addressing a deeper problem: the fact that designers were unintentionally creating inaccessible websites. She and her team wrote a program called [aDesigner](#)—the software she used to reveal *Spectrum's* flaws—to allow designers to experience a site as blind users do and to suggest ways to improve navigation for audio browsers.

Today Asakawa is a fellow at IBM, a poised and fashionable role model for women engineers, and a keen strategist for the company. In 2004, after earning a Ph.D. in engineering from the [University of Tokyo](#), she began to think about how her research interests could mesh with IBM's global goals. While she still works on new projects for the blind, she has broadened her efforts to include Web [accessibility tools](#) for illiterate and aging populations. That last category is of particular importance in Japan, where 40 percent of the population will be over the age of 65 by 2055.

Asakawa is glad to be a proselytizer for Web accessibility, but she longs for a day when her missionary zeal won't be necessary. "Information access has become so critical for our daily lives," she says in her soft but forceful voice. "It's not a privilege; it's a human right."