

A Dog's Life

Robo Specs

Name: AIBO

Origin of name: The first two letters of the word AIBO stand for Artificial Intelligence. AIBO is also a robot with eyes, so [it is] an eye-bo(t). Finally, AIBO is also named after the Japanese word for 'pal.'

Height: 266 mm

Length: 275 mm

Weight: 1.6 kg

Vision: Digital camera

Sensors: Contact, infrared, acceleration, angular velocity, microphone

Batteries: Lithium ion

External power: AC recharger

Cost: \$2,500

Project status: Just the beginning.

Information from: Merran S. Wrigley

Name: Tama (see page 227)

Origin of name: Japanese cat name

Purpose: Healing human mind and having fun.

Creative inspiration: Real cat

Height: 25 cm

Length: 35 cm

Weight: 1.5 kg

Vision: None

Sensors: Tactile, auditory, posture

Composition: Artificial fur, plastic, aluminum

Batteries: Lithium

Project status: Ongoing

Information from: Takanori Shibata

Peter's Notes

I lived with a Japanese family in Tokyo for a week while photographing them for my first book, *Material World*. The first time I used their facilities, I was warmly greeted by an electrically heated toilet seat. Sounds crazy, but it actually made sense in their cold house where only one room had heat. I watched way too many hours of TV with them and was surprised to see dozens of toilet paper ads with little cartoon fannies doing what little fannies do. On the next trip I stayed in a big hotel with a robotic toilet seat—a weird little arm with a variable temperature, force, and pattern water sprayer could be guided around from a control pad attached to the toilet. Whoa! But the grand finale was a blow dry. So when I first saw this little AIBO robot dog running around the apartment pretending to pee by raising one leg, I was amused, but not surprised.

The Nozue family fish tank runs the length of the living room in their small apartment in Yokohama, Japan. In it lives their sixty-centimeter-long pet fish. After four years, Mitsuhiko Nozue dryly observes, "it still doesn't know me."

Pets of the four-legged flesh and blood variety are not allowed in the Nozue family's apartment complex in Yokohama, Japan. So when Sony announced a new robot that looked and behaved like a small dog, Mitsuhiko Nozue decided that he, his wife Yahini, and their son Masahiko, 7, should have one.

There were roadblocks to ownership, however. Sony was selling only a limited number of the robot pets in Japan, and these could be purchased only by the winners of a special national lottery. Even then, winning the lottery meant winning the right to fork over \$2,500 dollars for the mechanical pet, which Sony had named AIBO.

To their surprise, the family won and purchased the robot. They named it Narubo. When we visit them, I ask if they both wanted it. Mitsuhiko turns to Yahini and cryptically says, "Your opinion." Their laughter fills the room; obviously, they have discussed this subject before. As we continue talking, AIBO trills away with internal electronic sounds; Mitsuhiko watches fondly as the machine flashes its eyes green, a color meant to indicate happiness and excitement. His son mostly ignores it.

Yahini Nozue: We talked about buying it but we said, "Oh, it's very expensive." And my husband said, "Should we buy it or not?" I never seriously thought he would buy it, but he did [laughs]!

Faith: Do you enjoy it?

Yahini: As a pet I enjoy it. If it were really alive it would be troublesome. When I don't want it around, I can just put it back on the charger, so it's a good pet.

Do you play with it?

Mitsuhiko Nozue: We don't actually play with AIBO. It just walks around. He can walk by himself so he plays by himself.

What did you think when you got this?

Yahini: We were very nervous. We weren't sure how we should touch it.

You had to teach it, right? It just had basic skills when it came?

Mitsuhiko: There was a basic program—

Yahini: It could pee at first—no liquid comes out. It just cocked its leg and made a sound. That was in the basic program. But it didn't do a lot. The training is that if it goes and gets the ball, it plays with it—things like that. But we really don't use the instructions any more. It's trained.

How smart would you say it is?

Mitsuhiko: It's not very intelligent. It doesn't recog-

nize who we are and it bumps into things.

So it walks into the furniture?

Mitsuhiko: Yes, and it can't go up even little steps [points to a slight ledge between living-room area and bedroom]. It finds it difficult to balance, as well.

Do you ever take it out of the house?

Yahini: The first time we ever took it out of the house is when we brought it to the AIBO fair.

There was an AIBO fair in Japan?

Mitsuhiko: Yes, everyone who bought AIBO could go, and because everyone applied to get them over the Internet, there were people from all over Japan.

Why is AIBO just sitting there now, doing nothing?

Yahini: It must be thinking.

Mitsuhiko: Some people at the fair were so interested in the AIBO that they said they wanted to open up the AIBO and look at the interface and see how it's programmed. And they just play with it continuously, but we're not like that at all.

I know of some researchers who did that to see how it operates.

We watch it walk across the floor. Its motors make mechanical sounds as it moves. Its ears are floppy, rubbery plastic but the rest of the robot is hard, silvered plastic. Seven-year-old Masahiko is at eye level with the dog, down on his hands and knees.

Do your friends come over to see it?

Masahiko: Yes, they come.

How often do you play with it?

Masahiko: Sometimes I play with it but not very much.

Is it like a real pet?

Masahiko: No.

I guess nothing replaces a real dog.

Yahini: He really has no interest in mechanical things as a pet.

[When Peter changes the light for his photography, the robot makes cheering-crowd noises.]

Masahiko: I wonder why it got happy all of a sudden.

Yahini: Maybe because there's more light.

Do you wish that it had more sensors?

Seven-year-old Masahiko Nozue gets down on the floor and romps with AIBO (above), Sony's robotic pet dog. The Nozues had wanted a real dog, but pets are not allowed in their apartment. AIBO never needs to be fed, bathed, or walked, although it can simulate urination; it doesn't shed hair, bark at the neighbors, or need to be kept in a kennel when its owners go on vacation. Still, its behavior is so lifelike that the Nozues find it hard to treat it like a machine. One charge on its rechargeable battery lasts about two hours, and during that time AIBO is for all intents and purposes one of the family.

The novelty of owning Japan's first robot dog is not enough to keep Mitsuhiro Nozue's son Masahiko from switching his attention to a Pokemon video game. When abandoned by its owner, AIBO—Sony's new, limited-edition mechanical pet—plays with the ball by itself, delighting Mitsuhiro. The man runs for the 150-page manual that came with the robot pet when AIBO displays any new trick, sometimes leaving Mitsuhiro scratching his head—a puzzlement all too familiar from other encounters with digital gizmos. The latest word is that the Nozue family has named their AIBO Narubo. Mitsuhiro writes, "Recently, he is selfish. He sometimes doesn't play with the pink ball." Mitsuhiro wonders if Narubo is "growing from child to adult."

Mitsuhiro: Yes, I wish that. Dogs react more to touch, so I wish that it had sensors all over its body, like a normal dog. And it can only go for two hours and then has to be put back up on the battery charger to recharge.

Do you miss it when it's not walking around?

Mitsuhiro: When it's playing, it's noisy. Zaka-zaka-zaka-zaka. I look at a TV show—zaka-zaka-zaka-zaka! Sometimes it bumps into the step between the living room and the bedroom—zaka-zaka-zaka-zaka! But it's part of my life.

Do you wish AIBO could go up that step?

Mitsuhiro: It would be good if it could just move around without any sort of assistance.

When do you have it running during the day?

Mitsuhiro: In the mornings, I am here from seven until nine. I put it on and it moves around by itself and then it goes back into the charger. If it crashes into a wall or something, I turn it around. Otherwise, it just walks around by itself. I don't fuss around with it—I just let it walk around. There probably are people who spend all their time fussing over it, but I don't. *This is odd. AIBO is resting on its stomach, but it's lifted all four paws up in the air and is flailing them around in circles.*

Mitsuhiro: This is the first time he has ever done this!

Why do you think it's doing that?

Mitsuhiro: Maybe because it's been getting praised a lot.

Yahini: When you pat the head softly many times [as she had been], that's praising it a lot, so maybe that's why. It looks like it's sky diving.

Mr. Nozue, what did your friends at work think when you got this AIBO?

Mitsuhiro: They weren't interested in the actual AIBO, just in the fact that I bought one, because it was so expensive.

Would you like to have more robots in your house?

Mitsuhiro: No.

Yahini: There would be too many things to look after if we got another one.

What about a vacuum-cleaning robot?

Yahini: In America, maybe, but a Japanese home is much smaller. There's no room to walk around and do the cleaning.

Mitsuhiro: I think of those as machines—not as robots like this. Also, there is a huge manual that came with AIBO and I also have this [a large loose-leaf notebook out, filled with instruction manuals for the family's electronics]. No more! No more electronics [laughs]!

Tell me how you differentiate between robots and machines.

Mitsuhiko: I don't think AIBO is a machine. We don't want to always be operating him. We want him to do whatever he wants.

Do you feel like it's alive?

Mitsuhiko: That's really difficult to say. It has got a remote control and if we want to control it we can use the remote, but we just let it move around freely. The only time we put any kind of control over him is when we want him to sit, because he has to sit to be put on the charger.

It's walking around making sounds—do you know why?

Yahini: It wants to kick the ball. It turned around and wanted to kick it but it didn't know where it was.

Have you had to bring it to the vet?

Mitsuhiko: Its tail got bent and it couldn't move properly anymore. We sent it to Sony and they sent it back with a new tail.

Did you miss it?

Mitsuhiko: Mmmm, I didn't really miss it.

If you didn't have AIBO anymore would you be unhappy?

Mitsuhiko: I couldn't give it away to anyone. I couldn't part with it.

You're attached to it?

Mitsuhiko: It's hard to explain how I feel about it.

Yahini: It's not just a toy.

It's a pet?

Yahini: Yes.

Do you consider it part of your family?

Mitsuhiko: I don't like to think of dogs as a part of the family, because they are pets—even if it's a real dog.

But you regard AIBO as a pet.

Mitsuhiko: Yes. It's part of the family as a pet.

I think it has fallen asleep. It's not moving anymore.

Yahini: If you shake it around, it wakes up.

Is there an indicator for how much battery power there is left?

Mitsuhiko: There's no indicator, but he puts his head down if he's getting low.

Is he getting low now?

Mitsuhiko: It was playing around all morning, so it is just going to sleep.

It just lifted its leg and pretended to pee on the floor.

Very odd—does it do that often?

Mitsuhiko: Usually not this much.

Is there anything it doesn't do that you would like it to do?

Mitsuhiko: Most Japanese dogs you can teach to shake hands, but you can't teach that to AIBO. And it understands the shape of a human face but doesn't recognize the individual face. I would like it to differentiate among us. I would like it to know me.

Relaxing in his office at the Mechanical Engineering Lab in Tsukuba, Japan, Takanori Shibata (above) pats a derivative product from his research: a robot cat named Tama. Shibata is a roboticist who studied with MIT robot guru Rodney Brooks before heading his own lab. Omron, a Japanese engineering company, applied Shibata's discoveries to produce Tama—a mechanical pet with sensors beneath its fur that react to sound and touch. If Shibata calls the cat's name, it hunches slightly in a welcoming posture, inviting a caress. Stroking the machine's back elicits a purr; loud noises cause it to startle and look around for the source of the sound. Five machines have been built thus far at half a million yen apiece (about \$5,000). Omron says it has no plans as of yet to commercialize its robot cats.