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NAGAKUTE Japan - They could hit fastballs draw portraits and be seen breathing. Not bad for robots. Even so these droids of all shapes and sizes more than 60 on display at the World Expo on Thursday still need some work. Their developers say it will be several years before robots that are designed to be part of everyday lives rather than serve as simple novelties take their place helping the sick rescuing disaster victims and entertaining families. Lined up in a row of booths the robots were on display in the sprawling expo in central Japan to showcase Japans leadership in robotics. With the nations economy still sluggish corporations researchers and government officials are hoping the sector can provide new growth opportunities. The Japan Robot Association a trade group expects the Japanese market for next-generation robots those being developed now as opposed to industrial robots currently in use to reach $14 billion by 2010 and more than $37 billion by 2025. But all the robots on display were test models and several had obvious glitches. Cooper a mechanical portrait artist developed by a candy maker was drawing the faces of visitors on large cookies with a laser pen. It has a program that translates images from a digital camera into line-drawing instructions but sometimes the robot delivered only a mishmash of scribbles. Another model the Batting Robot has a vision system that handles 1 000 images a second more than 30

times the human eye allowing it to accurately hit pitches up to 100 mph. At the expo however it was using a plastic bat to hit rubber balls at far slower speeds. Hiroshima University Associate Professor Idaku Ishii believes the robot can help train professional baseball players. However its ability to process information at lightning speeds might more practically be put to say detect cracks in walls caused by earthquakes. Many of the robots were designed to help communication. One worked as a fancy videophone replicating the moves of a distant caller with its mechanical arms and projecting a three-dimensional image of the caller on its face. A model called InterAnimal is a 4-foot-tall teddy bear that moves its arms and nods in synch to the sound of a human voice. Developers claim it can help children who have problems talking with adults. The robot that looks most like a human being is the Repliee Q1expo which is covered with a skin-like substance and moves its mouth and shifts its torso as though its breathing. It also appears to react to approaching people. 100Test