Time for robots to get real

by Helen Greiner

From robotic slug-killers to humanoid robots dancing or dealing cards, there's a lot of media buzz around robots. But, the roboticists behind such **ventures** need a serious reality check. The importance of focusing on practicality struck us during iRobot's **formative** years in the 1990s, when we were **engineering** robots as toys, oil-well **surveyors**, and commercial cleaners for industry-leading firms. Why? Companies would only pay good money for practical designs that performed **reliably**.

It's Ok for robots to walk, even jump, but the direction will be dictated by practicality

A good example is the eerily humanoid robot, called Atlas, "who" is 4.9 feet (1.5 meters) tall and weighs 165 pounds (75 kilograms), and uses Lidar and stereovision to **navigate** in its **surroundings**, according to Boston Dynamics, which makes the robot. Atlas is **designed** to be able to **take on emergency** situations where human life would normally be put at risk, such as going into buildings that have crumbled after an earthquake, or **dealing with** patients who have deadly, highly i**nfectious** diseases, according to the Defense Advanced Research Projects Agency (DARPA) where "he" is being developed.

In the video, the newest **version** of the humanoid does a kind of jump training called plyometrics, leaping between **raised** platforms, doing a 180-degree turn in the air on raised platforms and **performing** a backflip off a platform. Though he may not give American gymnast Simone Biles a run for her money right now, the robot does manage to stick the landing. Other videos show the robot stacking boxes on a shelf, ambling on a walk in the snow with a human "friend" and chasing after, and picking up, a box that's deliberately **moved out of** its **reach**. According to the Boston Dynamics website, Atlas can carry payloads up to 24 lbs. (11 kg). Atlas has other human-like abilities, such as a sense of **balance**, so **resists** toppling when pushed, and can get back up after a fierce shove.

Another example of practical, realistic application has actually seen very well **publicised** action when iRobot's military robots, originally **deployed** in Afghanistan to defuse improvised explosive devices, **proved** very useful to the human teams dealing with the nuclear emergency at the Fukushima Daiichi power plant in Japan. As a result, many in Japan have **questioned** the nation's research focus on singing, running, and dancing humanoid robots. It looks like change is afoot there and this is to be welcomed.

Human-like "Terminators" are fine for Hollywood, but we need to keep our feet on the ground

As a founder of iRobot Corporation, based in Bedford, Massachusetts, and CEO of robotics start-up CyPhy Works, it's clear to me that merely engineering "cool" human-like robots does little **to advance** the field. If robotics is to succeed like computing, what matters is making practical robots that do jobs well and **affordably** – **factors** that tend to get lost as people fascinate over the latest **autonomous** party pieces. In my view, **attempting** to **duplicate** humans robotically, outside of some specialist applications, is from the very start a wrong-headed **approach**. We already have about 7 billion humans on the planet and we are really good at what we do. To sell humanoid robots they would have to be better than people – and that is just not realistic yet. Roboticists who don't focus on **practicality** and cost are kidding themselves. Simply put, most people don't want humanoid, sci-fi movie robots in their homes. Before iRobot **introduced** the Roomba vacuuming robot in 2002, focus groups imagined it would look like the Terminator pushing a vacuum cleaner – and told us they would not accept such machines in their homes. But when we showed them that Roomba was a small, **unthreatening** box, reminiscent of bathroom scales, they loved it. Software standardisation, around the Robot Operating System and Linux, for instance, will help developers focus on the practical. This is a **tremendous** move because engineers, particularly in research universities, won't have to start coding from the ground up to build their own robots. Instead, their **challenge** will be to build software **packages** small enough to run on **affordable** processors, and robots that **avoid** the common embarrassment of being wimpy and underpowered with **limited** usage time. By focusing on bringing robots to market, **innovators** will be able to put the industry firmly on the commercially viable, world-changing track it deserves. Drop the gimmicks, focus on practical problem-solving, and robotics can change the world.

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