

ROBOT *the* GUY

By Scott Hurrup



Andrew Williams has been fascinated with computers since junior high school and the arrival of video games.

"I was curious not only how to play the games, but how they are created," he remembers.

In college he developed an interest in AI, or artificial intelligence. As the nascent video game and personal computer industries became global phenomena, Williams kept honing his skills. By the time he was a Ph.D. candidate, he was studying software and robotic agents that could interact with each other as a team to accomplish tasks.

Arriving at that focus called into play Williams' spiritual identity as much as his academic persona. Growing up, he had listened to his dad's stories of African-American role models, and George Washington Carver was near the top of that list. The more Williams learned about Carver, the more he was inspired by the scientist's example of faith.

"He'd go out to a field or garden, acknowledge God as Creator of everything, and then ask God to show him something about the sweet potato or the peanut," Williams says. "I realized if God created everything and has infinite knowledge, I would only need a speck of His knowledge to come up with thousands of Ph.D.s."

The Internet was growing rapidly. Even in a pre-Google era, search engines were coming into wider use. Williams' idea — God's idea, he would insist — was to develop in-

telligent software agents that would work behind the scenes as human users were bookmarking different Web sites into categories. Williams and research partners went on to apply their findings to help ophthalmologists and geneticists classify new disease subtypes, in particular, age-related macular degeneration.

RoboCup

Fast forward to 2003, and Williams experienced another radical "God idea." He was a professor at the University of Iowa when he sensed God was directing him to transition from research to specifically work with African-American students. In 2004, Williams and his wife, Anitra, moved to Atlanta with their three children: Adrianna, Rosa and John. Williams accepted a faculty position at Spelman College, a historically black college for women.

At Spelman, Williams has applied his robotics research to create a programming team of students.

"I had seen the Sony AIBO robots and had used them in Iowa thinking they would be good for training students how to program computers and robots," he says. "When I got to Spelman, I was able to start out with four AIBOs thanks to a grant from our college president."

The AIBO is a robotic dog, and at the cutting edge of over-the-counter personal robots. Williams and his team were soon competing internationally with their AIBOs through the multi-

Lunar hiker

Japan hopes to have a two-legged robot walk on the moon by around 2020, with a joint mission involving astronauts and robots to follow, according to a plan laid out in April by a government group.

Specifics of the plan, including what new technologies will be required and the size of the project's budget, are to be decided within the next two years, according to Japan's Strategic Headquarters for Space Development, a Cabinet-level working group.

Development of a lunar robot is part of a broad framework outlined by the group, which is charged with plotting a new course for Japan's space strategy. As a next step, joint exploration of the moon involving robots and astronauts will be considered.

— Associated Press



"As a father I want to make sure my daughters as well as my son believe they can take on any vocation."

— Dr. Andrew Williams

research project, RoboCup. By 2050, RoboCup organizers hope to field a team of humanoid robots capable of beating a champion human soccer team.

"We started our RoboCup team to play four-legged soccer with AIBOs," Williams says. "We were the first all-women team to qualify for the international competition. In 2005 in Osaka, Japan, there were 24 teams from around the world, with four from the U.S. The other three U.S. teams were from big engineering schools, and we're a small liberal arts college."

Williams' team competed in Germany in 2006 and Atlanta in 2007. This May they returned to Japan to compete in RoboCup's humanoid robot division using small Nao robots that have replaced AIBOs in competition.

Garbage in, garbage out

He's "Dr. Williams" to his students and robotics team at Spelman, but he's "Dad" at home. And while he would never equate a child with a robot, Williams points out a few connections fathers can make between computer programming and healthy parenting.

"In AI there is something called *machine learning*," he explains.

the ROBOT GUY



"You get robots to improve their performance, based on past experience. They learn how to do something better. A robot learns certain 'bad' behaviors that should not be reinforced, and certain 'good' behaviors that should be reinforced."

As a parent, Williams says he tries to show his children there are certain consequences for certain actions.

"If we follow God's principles and exercise wisdom in our decisions," he explains, "there are good consequences. But if we neglect that wisdom or don't seek God's wisdom, there are negative consequences."

He sees another correlation between raising children and creat-

Williams and the 2009 SpelBots robotics team

ing the right input instructions for a computer or robot.

"Garbage in, garbage out," he says. "If you allow your children to just watch anything on TV or listen to any kind of music, that becomes embedded in their brain, their consciousness. They tend to act it out. Whereas in Psalm 1, God says through David, 'Blessed is the man who doesn't walk in the counsel of the ungodly or stand in the way of the wicked, but his delight is in the law of the Lord.' That process of inputting God's Word into our minds — through hearing God's Word, reading, meditating and obeying — the more we do that day and night, God says we will be fruitful and prosper."



Rick Casst/Spelman College

Generations of blessing

Williams grew up in poverty, and his mother was often ill. His father only finished high school and worked as a laborer after serving in the Army. His mother never made it through elementary school growing up in Korea.

"But my parents were the best parents I could ever have," Williams says. "I was blessed to have a father who stayed with us. So many families are single-parent families now. Mom showered love upon us. Whenever it came to education, my parents would sacrifice for us. All six of us ended up graduating from college, and four of us have graduate degrees, including two Ph.D.s."

Now Williams is intent on pass-

ing along that heritage of love and sacrifice to his children.

"Working at a women's college," he says, "as a father I want to make sure my daughters as well as my son believe they can take on any vocation. There's a tendency for dads to steer their daughters away from engineering and science. One of the things I've done with our robotics team is to show that women can compete in a male-dominated robotics research field at the international level."

Parents need to raise children to meet their God-given potential, Williams insists.

"I wrote my book, *Out of the Box*, to encourage people not to place themselves in boxes of low expectations or live in a box of fear or failure," he says. "Or put God in a box of limiting what He can do in and through our lives." **tpe**

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ABCs OF SALVATION

To know God and be ready for heaven, follow these steps:

A. Admit you are a sinner.

"There is no one righteous, not even one ... for all have sinned and fall short of the glory of God." Romans 3:10,23 (See Romans 5:8; 6:23.)

Ask God's forgiveness and repent of your sins.

"Everyone who calls on the name of the Lord will be saved." Romans 10:13 (See Acts 3:19.)

B. Believe in Jesus (put your trust in Him) as your only hope of salvation.

"For God so loved the world that he gave his one and only Son, that whoever believes in him shall not perish but have eternal life." John 3:16 (See John 14:6.)

Become a child of God by receiving Christ.

"To all who received him, to those who believed in his name, he gave the right to become children of God." John 1:12 (See Revelation 3:20.)

C. Confess that Jesus is your Lord.

"If you confess with your mouth, 'Jesus is Lord,' and believe in your heart that God raised him from the dead, you will be saved." Romans 10:9 (See verse 10.)

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