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BME Seminar
Robotic Developments

As time progresses and technology advances, the need for perfection becomes much more apparent. That being said, there are many new developments within the biomedical engineering and robotics field that will revolutionize the way we live. The purpose of this presentation is to display several different robotic developments and show how relevant they are to our lives.

At MIT, Professor Gil Pratt along with several grad students, developed a walking robot called M2 that can rock from side to side and has all of the skeletal functions of a normal human being. The robot has 12 active degrees of freedom: 3 in each hip, 1 in each knee, and 2 in each ankle. The goals of M2 are

- Walk fast (1.0 meters/second)
- Walk efficiently
- Be reliable (work 9 out of 10 attempts)
- Have a large margin of stability and be robust to small disturbances (reasonable pushes)
- Be confident looking
- Become a "robotic workhorse" - a robot which can be reliably used to perform experiments without breaking
- Get it right the first time in design and schedule

Professor Gil Pratt is currently moving to Olin College.

Vecna Robotics has created a robot called BEAR: Battlefield Extraction and Retrieval Robot. This robot will hopefully be able to retrieve soldiers wounded in battle and/or any objects weighing up to 500 lbs. They are also developing other BEARs such as the SCI-BEAR that may one day be implemented into hospitals and nursing homes

to take care of the elderly, patients with impaired mobility especially spinal cord injury (SCI) patients. The HomeBEAR would be a domestic assistant that would help with daily living activities and "be able to interact with users, detect unusual behavior and notify appropriate parties (family members, emergency paramedics, etc.)"



Toyota Motor Corporation has developed a robotic leg that is able to jump approximately 1.6 inches off the ground. There is a mechanism in the "toe" that allows it to spring. They are still developing this leg to be able to jump in different terrain. There are some speculations that this may become a big step into developing better prosthetics.



http://www.vecna.com/robotics/bear_project/other_applications.shtml

<http://www.ai.mit.edu/projects/leglab/robots/m2/m2.html>

<http://www.technovelgy.com/ct/Science-Fiction-News.asp?NewsNum=739>