

Robotics

Team Last Pick:

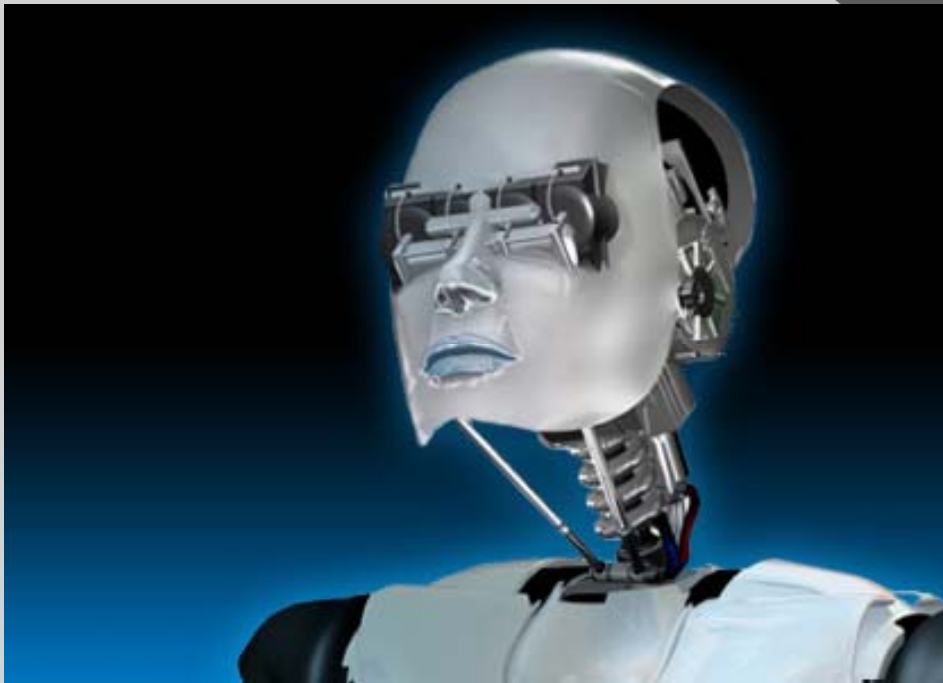
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Introduction

- History
- Purpose of robots
- Types
- Applications:
 - > Personal Assistance
 - > Construction/Manufacturing
 - > Search and Rescue
 - > Espionage
 - > Military
- Future
- Conclusion



History

- ◉ China (500 - *)
- ◉ Leonardo Da Vinci (~1495)
- ◉ Music (* - 1700)
- ◉ Industrial Revolution (1700-1900)
- ◉ Three Laws (1941-42)
- ◉ Programmable Computers (mid-1900s)
- ◉ Unimate (1961)
- ◉ Microprocessors (1971)

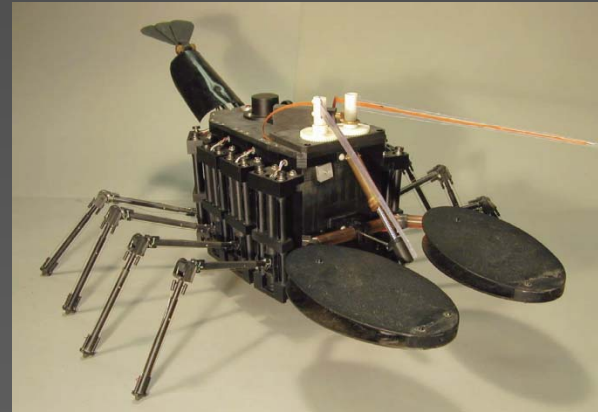


Purpose

- ◉ To accomplish a task without the need for human intervention?
- ◉ Repeatability?

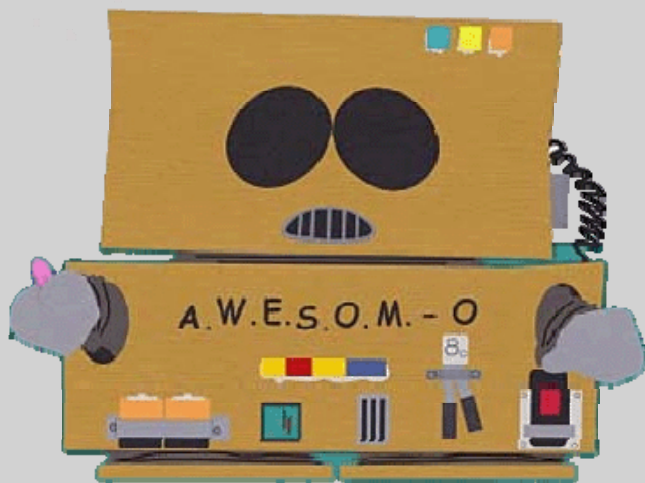
Types

- Biomimetic
- Vehicular
- Humanoid



Personal Assistance

- ◉ Most popular – vacuum cleaning (Roomba)
- ◉ Maid from the Jetsons (Rosie?)
- ◉ Asimo designed for human interaction



Construction/Manufacturing

Industrial Robots

- > Unimate
- > Welding/Sanding/Polishing
- > Packaging
- > Assembly

Robonaut



http://news.cnet.com/i/bto/20100204/422804_medNASA_R2_610x406.jpg



<http://www.robots.com/blog.php?tag=308>



<http://cfnewsads.thomasnet.com/images/large/012/12069.jpg>

Search and Rescue

- ◉ Disaster Aide
 - > Small size
 - > Safe to send in
- ◉ Fire/Police Applications



<http://14aat.qataracademy.wikispaces.net/The+Newest+Robot+Technology>



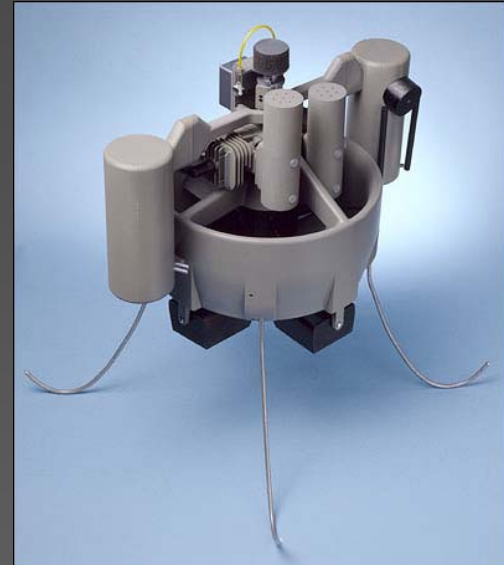
<http://www.networkddirectory.com/blogs/permalinks/6-2007/high-tech-help-from-rescue-robot.html>



<http://www.technovelgy.com/graphics/content07/rescue-robot2.jpg>

Espionage

- ◉ Micro Air Vehicles M.A.V.
 - > Fixed Wing
 - > Rotary Wing
 - > Flapping Wing
- ◉ Robotic Snake



http://news.cnet.com/i/ne/p/2005/040105microair_400x457.jpg



http://spectrum.ieee.org/images/public_html/automaton/Robert%20Wood%203%20cm%20wingspan%20micro%20aerial%20vehicle-thumb.png



<http://technabob.com/blog/wp-content/uploads/2011/02/hummerbird.jpg>

Military

- Military reconnaissance
- Aerial warfare
- Equipment transportation
- Diffuse bombs/IEDs
- Ground warfare



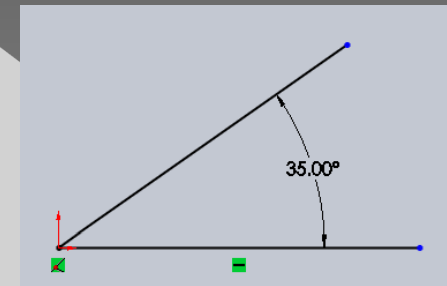
http://f00.inventorspot.com/images/big%20dog-1_0.jpg



http://en.wikipedia.org/wiki/Foster-Miller_TALON

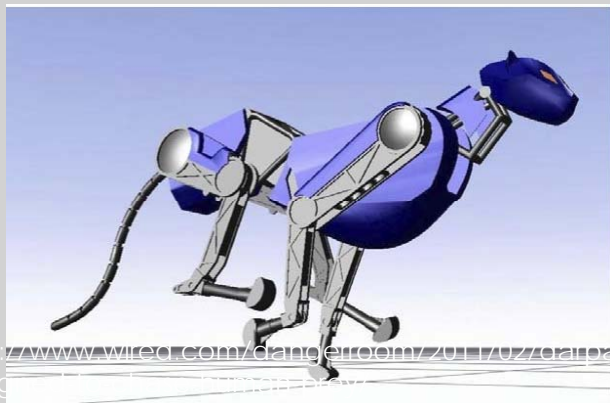


<http://www.af.mil/news/story.asp?storyID=123010674>



Future

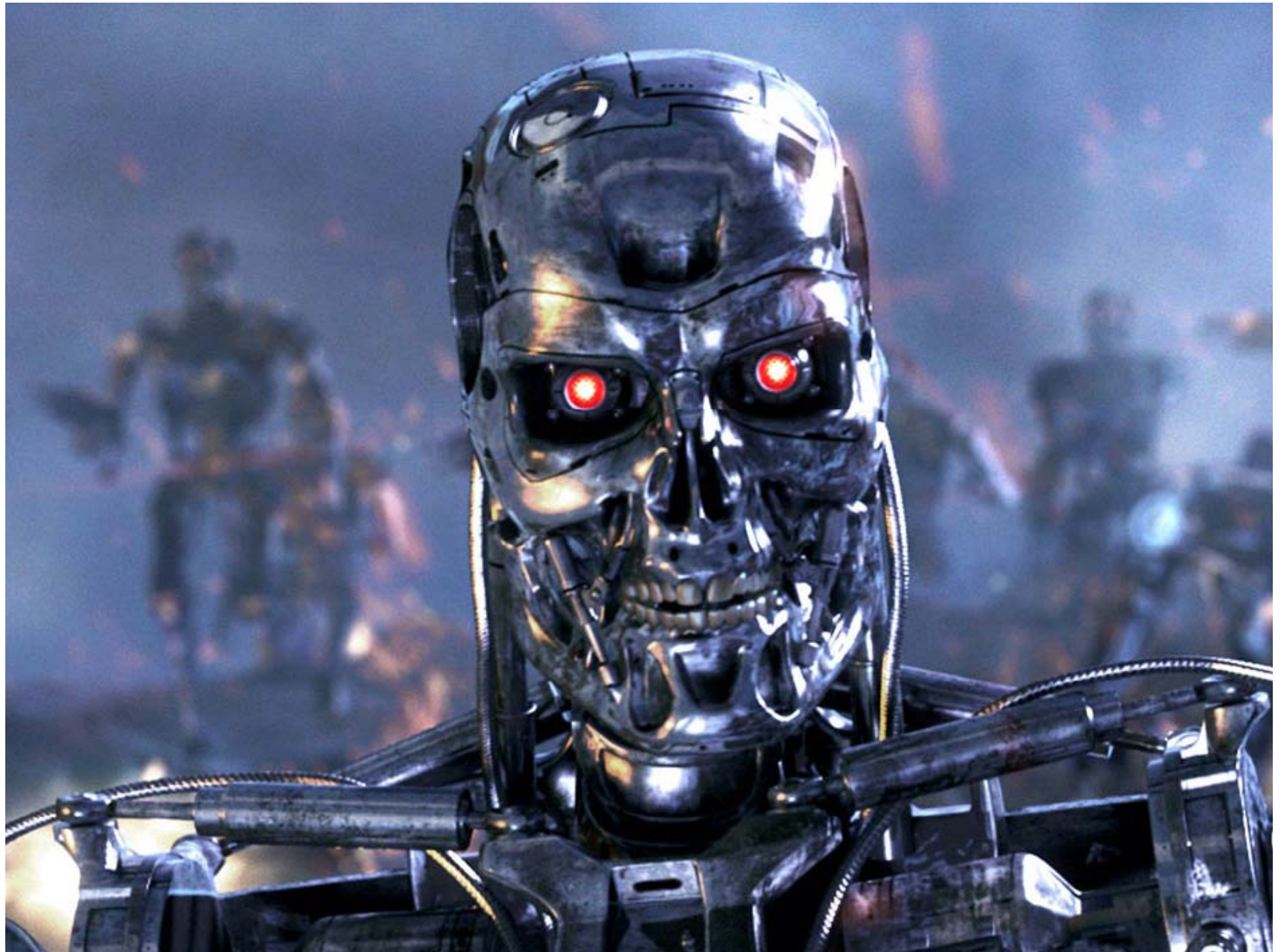
- LS3-Legged Squad Support System
- Cheetah
 - > Flexible spine
 - > Articulated head
- Atlas
 - > Walks heel to toe



<http://www.wired.com/dangerroom/2011/02/darpas-cheetah-bot-design/>

<http://www.wired.com/dangerroom/2011/02/darpas-cheetah-bot-designed-to-chase-human-prey/>

http://www.bostondynamics.com/robot_ls3.html



Conclusion

- Possibilities are endless
 - > Subsea
 - > Space
 - > War Zones
 - > Prosthetics
 - > Personal Assistance
 - > Manufacturing
 - > Search and Rescue

Sources

- http://www.armytimes.com/news/2008/09/military_ie_d_statistics_iraq_091708w/
- http://wiki.answers.com/Q/What_is_the_cost_of_training_a_soldier_in_the_military
- http://www.bostondynamics.com/robot_bigdog.html
- http://www.bostondynamics.com/img/BigDog_IFAC_Apr-8-2008.pdf
- http://www.qinetiq-na.com/Collateral/Documents/English-US/TALON_brochure.pdf
- <http://en.wikipedia.org/wiki/LIDAR>
- <http://www.wired.com/dangerroom/2011/02/darpas-cheetah-bot-designed-to-chase-human-prey/>