Save Lives

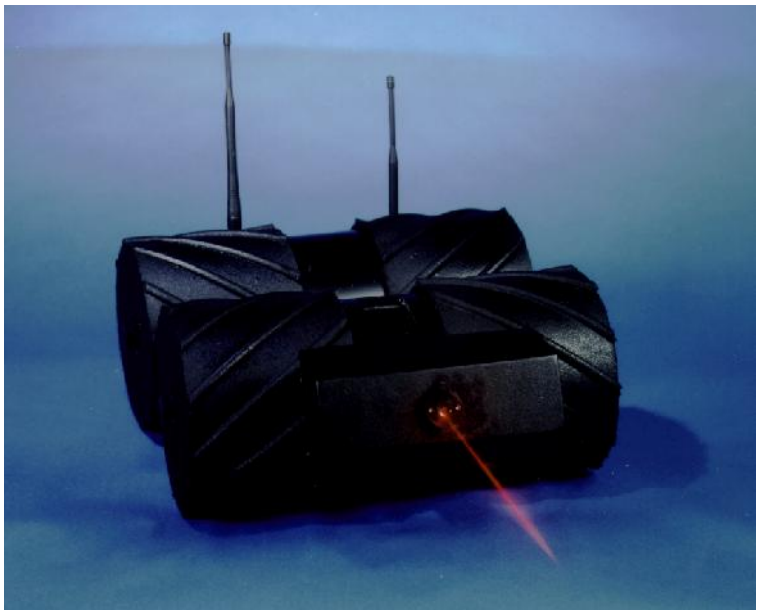
with the

Intruder™ Robot

A new tool for the Military and Law Enforcement

For dangerous situations...

- ***Recon***
- ***Delivery***
- ***HazMat***
- ***Bomb***



Features...

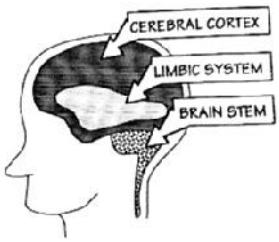
Real-time Video
Real-time Audio Real-time Control
Over One Mile Range

Unique All Surface Drive™
90 percent of the vehicle's surface rotates around the machine for maximum traction over all terrain...

Simple to Use ompletely Wireless

Angelus Research Corp. 11801 Cardinal Circle Unit #J, Garden Grove, California 92843 ph (714) 590-7877
fax (714) 590-7879 http://www.angelusresearch.com

The Software Architecture is based on the three levels of intelligence found in the human brain



Cerebral Cortex-Physically the outer layer of the brain, which is characterized by the folds just under the skull. Functions include: Decision making, analysis, and dreaming. This is called the Goal Level in the Triune Operating System.

Limbic System-The gray matter found in the center of the brain, controls human behavior such as breathing, hunger, etc. This is called Behavior Level. Real-time decisions are made when simple or complex actions are triggered.

Brain Stem-The base of the brain is connected to the spinal cord and nervous system. This controls our critical responses and instinctive behaviors. It is analogous to the Instinct Level which gives the machine common sense. Motor/sensor fusion allows the machine to instantly react to its environment. The Behavior and Goal levels can alter the Instinct's reaction at any time.

> Consider what happens when a person touches something *hot*. The nerve endings in the skin detects the heat and causes an immediate muscular response (*Instinct Level*). Additionally, a message (pain) is sent to the brains' Limbic System that activates a higher level behavior or set of actions based on *programmed behaviors* or *learned experiences*. This behavior or actions pre-empt the Cerebral Cortex (Goal Level) while the behavior is executing. When the action is finished, the Cerebral Cortex (Goal Level) regains control and continue where it left off or it may decide to change strategies or goals.

Moving-Two independent DC motors provide locomotion using an advanced pulse width modulation motor speed control. Speeds can be controlled from one to one hundred percent in one percent increments.

Touching-Two whiskers on the base section are used for tactile sensors.

Seeing-Four independent optical sensors are mounted on the base using Light Emitting Diodes (LED) and phototransistors pairs. A proprietary narrow beam sonar system is mounted in the panning head section for navigation and long range sensor scans. The sonar can detect object distances to one eight of an inch. A single Visible Red LED sensor located in this section has the capability to see about three to four feet. Three optical sensor arrays are located in the non-moving collar section for additional object detection.

Feeling-A force feedback system is used to monitor wheel load. Force is measured continuously to monitor the surface type or load. It is sensitive enough to determine whether the robot is operating on carpet of hard flooring.

Thinking-The processor in the base section performs real-time collision avoidance while the head processor navigates and scans the environment, simultaneously. The two computers are networked together. This allows them to cooperate in solving the navigation problem.

Learning-The language used for programming the onboard computers is English. No prior programming experience is necessary to create new commands (words) for this robot. However, the very tools used to create this easy to use and powerful language is always available to the user. The user words actually become part of language. The potential for this robot is limited only by the users imagination.

Angelus Research Corp. 6344 Sugar Pine Circle, Angelus Oaks, California 92305-0098 (909) 794-8325

Primary Features

Reconfigurable Design*-The design allows several important changes in the field. The motors can be changed out in a matter of minutes to change the speed or carrying capacity of the system. Two battery compartments are available so if weight savings is important, only one battery box can be used trading mission length for weight.*

Intruder Specifications

Wireless System

1 KM range, line of site
1 real-time color video camera link 420 lines resolution
1 RS232 9600 baud wireless control link
1 Remote controller using two dual axis joysticks for robot and head control or other device

Onboard Computers

ARC Motorola 68HC11 based intelligent robot controller
with resident Triune operating system and language onboard
32 Kilobytes PROM
32 Kilobytes of battery backed RAM
RS-232 Communication port

Physical and Electrical

Size: 22x22x10 inches
Weight 35 pounds without batteries
Weight 50 pounds with 1 set lead acid batteries
Weight 65 pounds with 2 sets lead acid batteries

Includes:

20 foot communication cable
Technical manual
Software disk

This technology was developed with the co-operation of the US Special Forces for military recon missions.

Intruder Price List

Basic Platform **$25,000**

All Surface drive
Articulated in the center for maximum traction
Intelligent ARC Robot Controller
RS-232 Interface 9600 baud (three wire)
15/30 Amp hour Lead Acid batteries (non rechargable)
Remote control unit

Wireless Subsystem

RS-232 computer communication-410mhz 2 watt fixed frequency
Video/Audio-3 watt real-time 910mhz
Note: a 900mhz control and 2.4mhz video is available

Onboard GPS **$19995**

A dual system utilizing 12 channels each of the US Global Positioning System and the Russian Glasnost System with a resolution of 7 meters. Navigation software is currently under development a should be ready by the second quarter 2000.

Delivery: **6 weeks**

Terms: **50% down when placing order and the balance due on delivery.**