ONLINE Portal to Bio Research - BioWeb

SA technical staff, under the direction of the Defense Sciences Office at DARPA, have developed and implemented a website focused on current developments in the field of biotechnology. The website, dubbed BioWeb, was developed to help promote a strategic Biotechnology thrust within DARPA initiated by Dr. Alan Rudolph. The website supports this effort by:

- Educating DARPA Program Managers in the various aspects of the life sciences.
- Communicating important developments in biotechnology both inside of DARPA and with other government agencies, industry and academia.

BioWeb’s INSIDE DARPA section lists DARPA Bio related conferences and workshops, new program starts, and keynote speaker series information.

Smart Sensor Web Demonstrates Network Centric Warfare

The Smart Sensor Web (SSW) project conducted its final live experiment at the Ft. Benning McKenna Military Operations in Urban Terrain (MOUT) village from 14 to 25 January 2002. The experiment demonstrated the utility of providing enhanced situation awareness information to a dismounted infantry platoon in an urban environment. The experiment showed that soldiers at the lowest echelons having access to detailed battlefield information in real-time were able to enhance force security and improve the effectiveness of small unit operations.

The experiment was conducted using Infantry and Armor soldiers outfitted with commercially available wearable computers linked through an RF LAN to a database that provided real-time and archived information from a network of imaging sensors, location sensors, weather sensors, unmanned aerial and ground vehicles (UAVs and UGVs), detailed simulations, and other significant military information. Wrist-mounted touch screen displays allowed soldiers to “pull” information on friendly, enemy, and civilian situation and intent, to visualize the natural environment and manmade features, and to identify obstacles. The soldiers also had the ability to input, or “push” data in spot report format for dissemination across the SSW network for better visualization of the enemy situation.

The experiment studied the increase in situational awareness and usefulness of the information provided by the SSW and technical aspects such as power consumption, bandwidth measurement, information queuing, sensor density, and sensor mixes.

These results, along with soldier feedback on the SSW, can provide valuable lessons learned for future weapons and soldier systems programs.

For more information on Smart Sensor Web, contact Dave Greinke, 703-276-2240, greind@sainc.com, or visit the SSW web page at www.sainc.com/ssw.

Recent Publications by Strategic Analysis Staff ...


**Entering the World of Neuroscience**

A user-friendly tutorial covering the field of neuroscience has been developed by Dr. Roy Stripling, a member of SA technical staff. Specifically designed for the intelligent layperson, this product features easy click-through access so that it serves equally well as a tutorial or as a topical reference. The CD-ROM includes an accessible, yet comprehensive description of the human nervous system’s form and function, a review of non-invasive brain-imaging technologies, and a description of the cellular and biochemical components of the nervous system.

**Report on Federal Research in Life Sciences Relating to DARPA Programs**

SA technical staff have recently completed a report that attempts to consolidate basic information about federal research in bioengineering, biotechnology, biomedicine, biocomputing, and bioinformatics, as it relates to research within DARPA. It is intended as a starting point for program managers, to give them an idea of what is going on in biorsearch and whom they can contact about collaboration.

The report focuses on research that is based in biology and has other applications and components, although research in non-biology fields that have branched into biology are also included. The information in this report was compiled primarily from official websites of Federal Departments and Agencies, but information has also been drawn from reports and surveys: only published material was used for this survey and research.

The report is organized by office (ATO, DSO, IAO, IPTO, MTO, SPO, TTO) and category (biomimetics, environmental biology, medicine and molecular biology, neurology and information processing, and sensors and imaging). The report finds that DARPA is involved in innovative and unique research in biology and other fields, and this research is not being duplicated elsewhere. However, there are similar programs at many institutions: programs with similar goals and methods to those at DARPA. Collaboration between program managers within and outside of DARPA will improve the efficiency and flow of ideas on current projects, as well as in the future. This type of collaboration will become more important as biorsearch grows to encompass more fields and disciplines.

**Defense Science Board Current Studies**

Strategic Analysis staff are currently supporting several Defense Science Board (DSB) Task Forces. The DSB, composed of members from civilian life, advises the Secretary of Defense, the Deputy Secretary of Defense, the Under Secretary of Defense for Acquisition, Technology and Logistics, and the Chairman of the Joint Chiefs of Staff on scientific, technical, manufacturing, acquisition process, and other matters of special interest to the Department of Defense.

Current Studies being supported by Strategic Analysis, Inc.:
- Aircraft Carriers of the Future
- Homeland Defense Against Bioterrorism
- Intelligence Support of the War on Terrorism
- Missile Defense / 2002 Summer Study

**New Faces at SA**

Julius Chang, PhD - Julius joins SA after several years of exemplary service with the National Research Council at The National Academies. While at The National Academies, he was responsible for supervising studies in nanomaterials, airport explosives detection, biosensors for detection of biological warfare agents, fiber-reinforced polymer matrix composites, bio-inspired/derived materials, biomedical engineering materials and applications, and advanced lightweight materials for Army trucks. Prior employment includes seven years at The Center for Naval Analyses (CNA) and a two year assignment with IBM. He received his PhD in Material Science from the Massachusetts Institute of Technology in 1989 where he conducted research on Nickel-Based Superalloys.

Andrew Hackmann - Andrew recently joined SA as a Program Analyst supporting Capt. Comis at the Office of Naval Research. After receiving a BA in Business from Villanova University, Andrew enlisted in the Navy where he worked as a Combat Information Center Officer on board the USS Vicksburg and later as an Engineering Training Team Leader at the US Navy’s Training Command in Mayport, FL.

Amy Kruse, PhD - Amy joins SA after completing her Post-Doctoral Research at the Beckman Institute, University of Illinois. While at the Beckman Institute, she spearheaded a strategic initiative to sequence the songbird genome, including research in microarray and bioinformatics technologies. Amy received her PhD in Neuroscience from the University of Illinois where she was a National Science Foundation Graduate Fellow. She currently provides support to LCDR Schmorrow at DARPA on the Augmented Cognition Control of Agent Based Computing program.

Roy Stripling, PhD - Roy joins SA after completing his Post-Doctoral Research at the Beckman Institute, University of Illinois. He has over ten years of experience in the field of neuroscience, with extensive knowledge ranging from cognitive psychology to molecular and genomic function. Roy received his PhD in Neuroscience from the University of Illinois where he co-developed a genomic / bioinformatics based approach in the lab to expand understanding of the molecular events that underlie memory function.

For more information on the Neuroscience tutorial, contact Roy Stripling at 703-527-5410 or rstripling@sainc.com.