

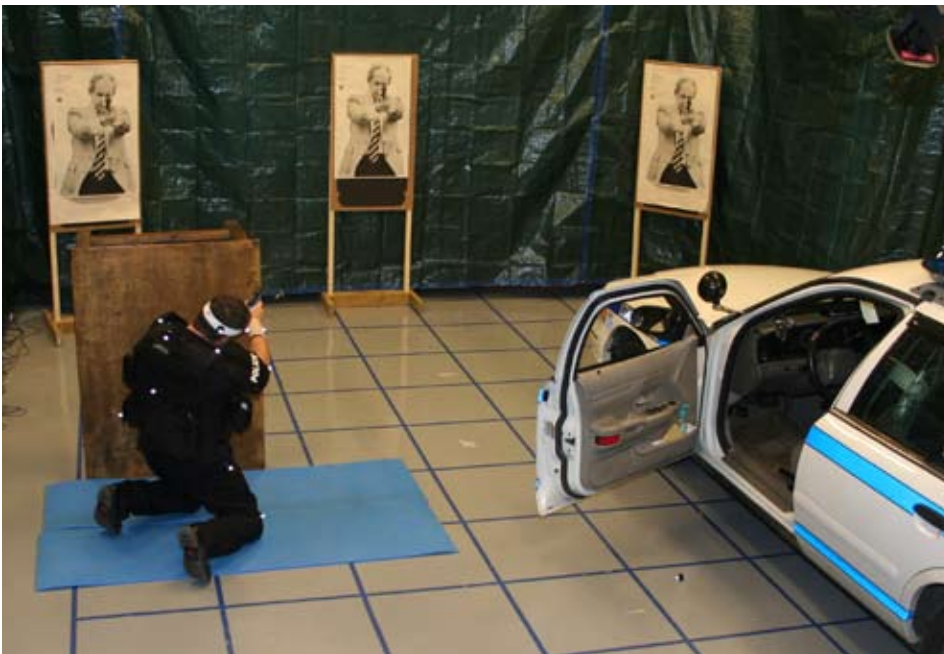
TODAY AT

CENTER FOR ADVANCED VEHICULAR SYSTEMS

CAVS



Helping Police Help the Community



Sgt. Brian Lafoon takes aim at targets while wearing motion capture equipment for the analysis of officer mobility vs. armor protection.

local trainers to local officers and how effectively the training improves officer performance.

In the past, the first responding patrol officers would secure the perimeter and wait for SWAT officers to arrive. However, partly due to high profile active shooter events over the last 8 years, procedures are undergoing a change, and first responders are expected to respond immediately to save lives.

“We are going to analyze how the police instructors take their training back to the other officers in their department,” said Daniel Carruth, who is heading up the research.

The Mississippi Active Shooter Training Evaluation project was recently funded with \$85,000 from the Department of Justice’s Bureau of Justice Assistance.

“We have a great relationship with local law enforcement and the Mississippi Office of Homeland Security,” said Carruth. “When they decided to get this training, they wanted to ensure that it is of the highest quality. So they consulted us to help them analyze the training for effectiveness.”

To evaluate the impact of training on patrol officer performance, Carruth and a team of researchers from the Human Factors and Ergonomics Laboratory at CAVS will compare officer performance from simulated active shooter events before and after the local versions of the ALERRT training.

Carruth and the Human Factors team are also involved in another project analyzing the safety of police officers’ armor. The project is

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Local law enforcement will be more skilled at handling crisis situations after working on two newly-funded projects with CAVS researchers.

The first project will analyze the effectiveness of a program providing training to prepare officers for emergency situations with an active shooter, such as the one at Virginia Tech earlier this year. Starkville and Mississippi State University police departments will send officers to the ALERRT training program held at Texas State University in San Marcos. The officers who have been trained will then return home and train other officers. CAVS researchers will analyze how training is passed from ALERRT to



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Across Enemy Lines

A project called SAVIOR could help save lives by making it easier to see across enemy lines with larger high resolution cameras.

The SAVIOR (Surveillance Augmentation Vehicle - Insertable On Request) project, in development by General Atomics, is an ultra-high mobile security and surveillance vehicle system.

“This is a mobile surveillance vehicle with an extremely high resolution camera with a wide field of view,” said Wesley Reeves, a researcher heading up the project at CAVS. “So instead of looking through a soda straw at the enemy, you have a big picture tiled across 6 computer screens.

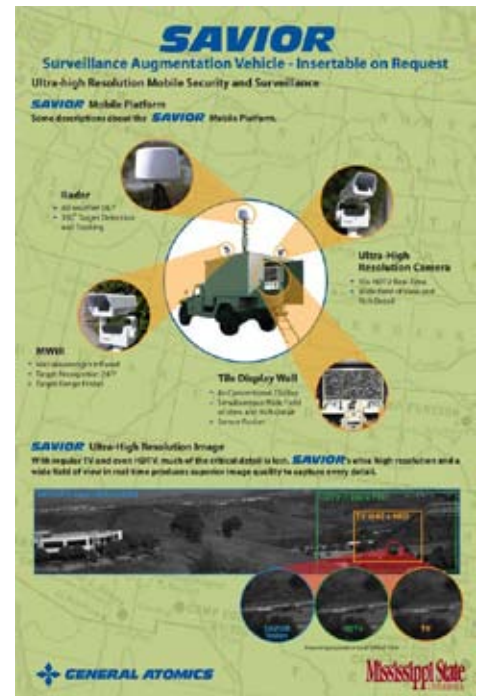
In addition to the high resolution camera, the vehicle is also equipped with a radar unit for target tracking, a thermal camera, and several

smaller cameras.

In early 2007, General Atomics shipped a prototype vehicle used for security and surveillance to CAVS. A team of researchers then began working on the vehicle to identify and outfit the vehicle with the necessary infrastructure to support the various sensors, cameras, and computers used for surveillance.

After completion, the prototype vehicle was successfully demonstrated at the Force Protection Equipment Demonstration 6 show, held August 14th-16th in the Washington D.C. area.

The SAVIOR project uses high-resolution cameras for surveillance.



Helping Police Help the Community: Continued from Page 1

being done in collaboration with Lawrence Technological University in Southfield, Michigan. Researchers at LTU will gather data on non-fatal gunshot wounds. No data has been collected on officers who are shot in non-fatal areas where armor doesn't cover. Studying these types of wounds is crucial to designing new personal body armor that will help reduce recovery times and the impact of life-long effects from the injury.

“Armor is a trade-off between safety of the officer and the ability move around well enough to do your job,” said Carruth.

Carruth and his team will use motion capture equipment at CAVS to perform ergonomic evaluations of different kinds of armor. The study will help police departments choose which armor is appropriate for their safety and performance needs. The team recently received a retired Ford Crown Victoria from the Starkville Police Department to study the ergonomics of getting in and out of a police vehicle when responding to

a situation.

The personal body armor project has been funded by the National Institute of Justice for \$225,000 over 2 years.

For more information, contact Daniel Carruth, at 662-325-5590, or dwc2@cavs.msstate.edu.

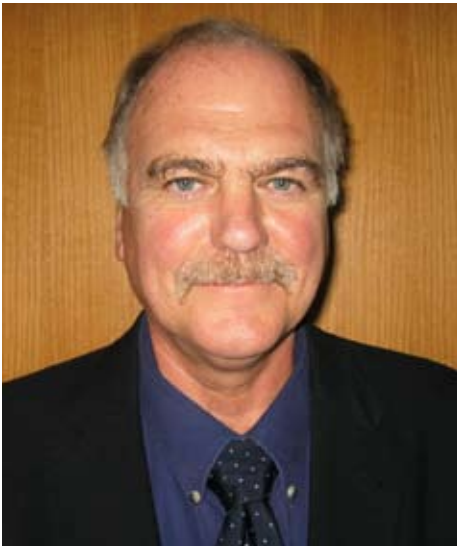


From the Last Quarter:

- Submitted 13 proposals, totaling \$7,703,026 for future funding
- Submitted 16 articles for publication and 21 conference submissions
- During the same time CAVS was responsible for:
 - 11 published articles
 - 29 presentations
 - 4 new patent disclosures
- 9 members of the CAVS program were part of the team that submitted a proposal to the National Science Foundation for a Materials Research Science and Engineering Center entitled “Center for Multiscale Studies on Engineering Nano-Composites” proposed for 6 years at \$16,775,518.

Welcome to CAVS

Doug Bamman



Joining the CAVS family is Doug Bamman. Bamman comes to CAVS from Livermore, California, where he worked for 26 years at Sandia National Labs.

Bamman received his undergraduate degree from Illinois State University in physics and then went on to work for Caterpillar for 2 years. He then was accepted at the University of Illinois where he completed a Master's and Ph.D. degree in theoretical and applied mechanics. Bamman recently retired from Sandia National Labs as a distinguished member of the technical staff.

In addition to joining CAVS, Bamman will also be working as a full professor in the mechanical engineering department on campus. He will be working with students at CAVS on projects related to Sandia, welding manufacturing processes, failure prediction, and crash impacts. Since joining CAVS, he has been involved with the Spotwell project for Oakridge National Laboratories.

Bamman says he is looking forward to working at CAVS on exciting projects and most importantly, with CAVS researchers and students.

"I'm looking forward to working with all the bright young people here," Bamman said.

He can be reached at bamman@cavs.msstate.edu, or at 662-325-8822.

Coming to CAVS to work with light metal sintering and substrate design is Pavan Suri. Suri graduated with a Ph.D in Engineering Science and Mechanics from Pennsylvania State University-University Park in 2001. After graduation, he worked with the Center for Innovative Sintered Products as a research associate. Before joining CAVS in August 2007, Suri worked with Matsushita Electric Works

Pavan Suri



Ltd., better known for their Panasonic brand products, in Osaka, Japan as an International Specialist, working with high thermal conductivity substrate materials for electronic applications and processing of non-ceramics for dental implants. He has also worked on the sintering and property evaluation on a wide range of materials such as steels, non-ferrous alloys, superalloys, and heavy alloys.

Pavan Suri can be reached at 662-325-5580, or at suri@cavs.msstate.edu.

New Center Funded with 2.4 Million

A Center for Virtual Design and Manufacturing is being formed at CAVS and will provide significant impact to manufacturing and design engineers. The center will help to design components and systems that are safer, more cost effective, and lighter earlier in the design cycle. Researchers will perform solidification, thermo-mechanical process design, joining technology, powder metallurgy, natural fiber composite, high rate experiments, and multiscale modeling in collaboration with Oakridge National Laboratories and Northwestern University.

In February 2007, CAVS was awarded \$2.4 million for the creation of the center. The program will cover two years of development. For more information, contact Mark Horstemeyer at mhorst@cavs.msstate.edu or 662-325-7308.

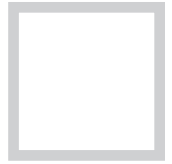
Working Toward Less Reliance on Foreign Oil

A new center at CAVS is doing research to lightweight vehicles so they will use less energy. In August 2006, CAVS was awarded \$1.98 million for the creation of a program named Southern Regional Center for Lightweight Innovative Design (SRCLID). The program will extend over two years.

The SRCLID program was formed to reduce emissions and posture the U.S. to have less reliance on foreign oil, and focuses its research and educational enterprise on lightweighting vehicles. The goal of the program is to develop physics-based multiscale material models to be used for the design of components, systems, and materials for the southern automotive corridor of the U.S. The development of new materials and math-based tools will be used in future vehicles under various crash and high-speed impact environments.

For more information, contact Paul Wang at pwang@cavs.msstate.edu or 662-325-2890.

MISSISSIPPI STATE UNIVERSITY
CENTER FOR ADVANCED VEHICULAR SYSTEMS
200 RESEARCH BLVD. STARKVILLE, MS 39759
P.O. BOX 5405 MISSISSIPPI STATE, MS 39762



ABOUT CAVS



CAVS research center in Starkville, Miss.

CAVS' research and development mission is to produce better and more advanced vehicles at reduced production costs and shorter product development times. The underlying technologies developed at CAVS are not limited to the automotive industry, but are applicable in other industrial sectors. CAVS is also dedicated to engineering extension and advanced technical training in order to increase the industrial competitiveness of Mississippi and produce more jobs for Mississippians.

CAVS Director, Rand German, can be reached at german@cavs.msstate.edu. Deputy Director Zach Rowland can be reached at zrowland@cavs.msstate.edu.

NEWSLETTER STAFF:

AMANDA McALPIN
AMCALPIN@CAVS.MSSTATE.EDU
JENNIFER BROU
JENNIFER@CAVS.MSSTATE.EDU

FOR MORE INFORMATION ABOUT CAVS OR ANY OF THE PROJECTS CONTAINED IN THIS NEWSLETTER PLEASE VISIT OUR WEBSITE AT:

WWW.CAVS.MSSTATE.EDU

FOR TOUR INFORMATION CONTACT BOB KIRKLAND AT KIRKLAND@CAVS.MSSTATE.EDU

Mississippi State
UNIVERSITY

Center for Advanced Vehicular Systems
200 Research Blvd. Starkville, MS 39759
Phone: 662-325-5431 • Fax: 662-325-5433 • info@cavs.msstate.edu

