The Center for Advanced Transportation Technology Laboratory (CATT Lab) is looking for students to conduct research using the latest in information technology. Students are given a great deal of responsibility and freedom to expand their engineering and computer science abilities while developing and integrating usable systems and tools for the lab. Our students are currently working on a variety of research projects using technologies and skills such as:

- PHP
- JAVA and J2ME
- Cold Fusion
- Flash
- LabVIEW
- PostgreSQL
- MySQL
- SQL
- C++
- C#
- OpenGL
- 3D Studio Max
- 3D Modeling and Graphics
- Web-based Applications
- Geographic Information Systems (ESRI's ArcInfo suite and MapServer)
- Video Streaming
- Statistical Modeling
- Traffic Modeling
- PDA Application Development

**Undergraduate Students**

Undergraduate students form a key component of the CATT Lab. University of Maryland undergraduates in civil engineering, systems engineering, computer science, electrical engineering, computer engineering, and geography are encouraged to become integrally involved in research as well as development of the research "infrastructure" in the laboratory. There are a large number of positions open for students to work full time in the summer and on a part-time basis during the academic year. The lab is flexible for students who want to seriously work, but still need time for summer vacation plans or summer course work. All interested students are encouraged to apply. **EVEN STUDENTS WITHOUT THE ABOVE MENTIONED SKILLS** should apply. Transportation and information technology experience gained in the laboratory has proven to be very attractive to corporate recruiters. Interested students are encouraged to contact Michael Pack to apply.

**Michael Pack**

Center for Advanced Transportation Technology Laboratory
301-403-4628
Email: PackML@umd.edu

**SPECIFIC NEEDS**

**3D Gaming and Animation**

Suggested requirements: The CATT Lab is developing a number of interactive 3D games, simulators, and graphics. We are looking for students interested in gaming and 3D modeling. Students with programming experience in C++, OpenGL, and 3D Studio Max will be considered first; however, **ALL INTERESTED STUDENTS are STRONGLY encouraged to apply.**
Flash & ColdFusion Programmers(s)
Suggested Requirements: Students need to have passed both CMSC106 and CMSC114 or the equivalent CMSC131 and CMSC132. Passing the exemption exam or AP computer science exam will work too. Experience with ColdFusion MX, Flash MX, SQL, Java, and databases would also be a plus. Understanding of Flash Remoting is a plus. Those without Flash & Coldfusion experience who can show basic programming proficiency are still encouraged to apply. To see examples of some of the Flash and Coldfusion applications developed in the lab visit: http://www.cattlab.umd.edu/cf/

JAVA Programmer(s) and J2ME Programmer
Suggested Requirements: Student needs a strong Java development background with experience developing GUIs using Swing and AWT packages in Java 1.4. Experience developing multi-threaded applications will be helpful. SQL basics needed, with the ability to understand and develop optimized queries over large data sets. Some experience writing batch files would be helpful, but not required. Students not meeting all requirements, but who still have a strong JAVA background are encouraged to apply.

LabVIEW Programmers (for machine vision applications)
Suggested Requirements: Students who have experience programming in LabVIEW or who are interested in learning are strongly encouraged to apply for these positions. LabVIEW is a graphical programming language. The CATT Lab uses LabVIEW to write machine vision programs which count cars and track vehicles. These students may also write programs to control external devices such as camera controllers and other robotics. Students interested in machine vision, image processing, and LabVIEW are strongly encouraged to apply. To see some video clips of some CATT Lab processed videos visit: Image Processing Research

DB Administrators PostgreSQL, Oracle and MySQL
Suggested Requirements: The CATT Lab designs and manages large, continually updated transportation databases from national and state agencies. The CATT Lab needs database administrators who can work with PostgreSQL, Oracle, and occasionally MySQL databases. Applicants must have knowledge of database design and normalization. Experience with PostgreSQL and/or Oracle is strongly desired.

Other Openings
Other students who may not have specific expertise in the above areas, but who are interested in CATT Lab research areas are also strongly encouraged to apply. The above skills are only suggestions; therefore, any applicant who is willing to learn will be strongly considered for these and other available positions. For those interested only in research experience, there may be additional opportunities for volunteer work and/or course credit options. The CATT Lab offers many opportunities to work with real-world systems that will have a tremendous impact on transportation and other systems. Visit http://www.cattlab.umd.edu for more information on the CATT Lab or contact Michael Pack at PackML@umd.edu for more information.