**Porting the CESAR Source Localization of Underwater Targets Code
to the Intel Visual Fortran Compiler**

The United States Navy uses sophisticated algorithms to remotely detect underwater targets in near- real- time. The computational cost associated with these source localization algorithms is so excessive that only small sensor networks can be modeled to date. There is therefore, a strong incentive to carry out the computations on emerging computational platforms (such as the EnLight optical processor or the IBM CELL processor). Prior to such move, the modeling codes need to be analyzed using the latest available compilers. The objective of this task is to port the CESAR source localization code NOGA_ONR from the Compaq Fortran 6.6 to the latest Intel Visual Fortran compiler that uniquely captures the architecture and computational properties of the Intel processors. Our approach involved: (1) installing Intel Visual Fortran 8.1 and integrating it within the Microsoft Visual Studio.NET, (2) compiling the program and modifying the code as necessary, and (3) recording and comparing the results. Once the code is validated on the new compiler, algorithm modifications can be initiated to study possible acceleration methods for larger scale sensor networks. The project will be beneficial to the U.S. Navy for further development of maintaining naval dominance.

Student's Name: **Keitha Griffin**
School Student Attends: Alabama A&M University
Name of Mentor: **Dr. Jacob Barhen**
Division: Computer Science and Mathematics
Program: Research Alliance in Math and Science (RAMS)