UTC PROJECT DESCRIPTION

PROJECT NUMBER:
99115

PROJECT TITLE:
Improving Crash Location, Display, And Analysis By Combining Care And GPS Technologies

PRINCIPAL INVESTIGATORS:
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PROJECT OBJECTIVE:
The objective of this research project is to improve vehicle crash analysis through accurate and inexpensive collection of crash locations with a global positioning system.

PROJECT ABSTRACT:
This research project will investigate a new and innovative method to collect location data associated with vehicular crashes. Global Position System (GPS) technology will be employed as an easy, low cost, and accurate method to collect crash location data. Currently, crash locations are estimated by police officers and are often reported at identifiable points such as intersections and mileposts. This produces a crash clustering effect at mileposts and also reduces the ability to return to the exact location of a crash. Low-cost GPS units will allow accurate location data to be collected with minimal effort. This location data will be translated and stored in the existing Critical Analysis Reporting Environment (CARE), which stores vehicular crash data for the state of Alabama. To the end user of CARE, the new data will be seamlessly incorporated into the system, thereby improving analysis without adding complexity.

PROJECT TASK DESCRIPTIONS:
1) Establish Advisory Committee, identify the pilot study area, and conduct literature review.
2) Acquire GPS equipment and perform laboratory accuracy study.
3) Evaluate method for estimating crash location and develop a GPS data collection approach.
4) Collect crash location data with a GPS unit, do preliminary study.
5) Compare GPS data with highway patrol officer data for the same crashes.
6) Improve procedure for using GPS units to collect crash locations.
7) Develop an automatic procedure for downloading GPS locations, translating data, and incorporating it into the existing CARE database.
8) Conduct a pilot study with officers to analyze the effectiveness of GPS data collection.
9) Investigate the potential for incorporating location data into a geographical information system.
10) Produce final report and procedure manual.

MILESTONES AND DATES:
Task 1: Sep – Oct 1999
Task 2: Oct – Nov 1999
Task 4: Jan – May 2000
Task 5: Apr – May 2000
Task 6: Jun – May 2000
Task 7: Oct 1999 – May 2000
Task 8: May – Jul 2000
Task 9: Jun – Aug 2000
Task 10: Jul – Aug 2000

TOTAL BUDGET:
One-year project: UTCA $50,122; total budget $101,800.

STUDENT INVOLVEMENT:
Two graduate students and one or two undergraduate students will participate in this research. Their involvement will be at all levels including literature review, equipment acquisition, equipment testing, programming, data collection, analysis, and report writing. It is anticipated that conference papers, journal articles, and master’s theses will be produced by the students working on this project.

RELATIONSHIP TO OTHER RESEARCH PROJECTS:
This project will enhance the crash data stored and accessed through the CARE system, a major research effort of Dr. Dave Brown of The University of Alabama. This research is also intended to be an initial step in improving collection and display of crash data. By establishing a working relationship with Michael Anderson of The University of Alabama in Huntsville, this project will also foster future collaborative research.

TECHNOLOGY TRANSFER ACTIVITIES:
The results produced during this research will be posted on the UTCA’s World Wide Web site. Because this research has the potential of reducing traffic hazards and saving lives, the results will be presented at a national conference and published in a refereed journal. By accomplishing these technology transfer goals, the research performed in this study will be available to state and local agencies interested in this technology.
POTENTIAL BENEFITS OF THE PROJECT:
The benefits from this project are improved data collection at crash locations, which in turn will improve the traffic engineering ability to ascertain the cause of crash and correct it.

TRB KEYWORDS:
Global positioning system, GPS, geographical information system, GIS, crash location.