
Intelligent Transportation Research Center (ITRC)

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Transportation is an important infrastructure for our society. The U.S. interstate highway network, for example, contributes significantly to improving our standard of living. On the other hand, current transportation systems have serious problems including congestion, safety, and environmental issues. While the problems are becoming more serious, the conventional solutions such as building new roads are getting more difficult. It is now time to propose a new transportation scheme for solving those increasing problems. Fortunately, we have a technical foundation to propose Intelligent Transportation Systems (ITS) for improving the existing transportation systems by utilizing microsystems and other related technologies.

ITS includes various systems for private and public transportations and also for roadside functions. Some early systems are already commercially available but significant research is needed for more advancement. Examples of commercially available systems include intelligent cruise control for controlling the distance to the car in front, intelligent traffic lights which give a high priority to buses and emergency vehicles, and smart roadside cameras for detecting accidents. Furthermore, ITS has possibilities of becoming the first large-scale application of the next generation communication networks.

In responding to those social needs, MIT's Microsystems Technology Laboratories has established the Intelligent Transportation Research Center (ITRC) in September 1998 as a contact point of industry, government, and academia for ITS research and development. The emphasis of the center is the integration of component technology research and system design research. The integration of technical possibilities and social needs is another focus of the center. Multidisciplinary teams are working on various aspects of ITS to find real solutions.

I. Masaki leads the center, and the faculty collaborators include B. K. P. Horn, H.-S. Lee, T. B. Sheridan, C. G. Sodini, J. M. Sussman, and J. L. Wyatt. Five companies have joined the center as members, and some of them have their representatives staying at MIT as visiting scientists. Research projects range from custom chips for wide-dynamic imaging and array processing to sensor-fusion, real-time stereo vision, three-dimensional image compression, recognition of compressed image without decompression, internet-based network architecture, and the next of the next generation internet.