

Press Release

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New High Performance Embedded System for Traffic Monitoring

Moscow, Russia March 1, 2000 — RC "Module" has developed "TrafficMonitor" — a stand-alone real-time embedded system for monitoring motor roads and measurement of traffic characteristics.

The "TrafficMonitor" is a first commercially available system based on NeuroMatrix® technologies and NM6403 DSP. The combined unit is a hardware part of the system designed by RC "Module". It consists of NeuroMatrix® NM4 CompactPCI Board and mezzanine framegrabber. The unit conforms to the Euromechanics standard of a size 6U and comprises four NeuroMatrix® NM6403 DSPs, two static memory banks (2 MB and 4 MB) for each processor and two synchronous dynamic memory banks (64 MB each). The flash-memory accessible for writing and reading from the processors and CompactPCI bus is used for storage of application software secures stand-alone mode. The CompactPCI bus is used for host access and testing. The mezzanine framegrabber is based on Philips SAA7110 chip and includes RS-232 interface. Its digitizing mode and parameters are set by software. The framegrabber input data is TV signal of PAL/NTSC standard from gray-scale camera.

The system is equipped with original software and solves the following tasks:

- detection of moving vehicles in the area determined during installation;
- identification of the same vehicle in different frames (time moments);
- classification inside specified set of classes;
- calculation of each vehicle and each lane traffic characteristics: vehicle flow, vehicle velocity and average vehicle velocity, vehicle headway, average lane occupancy.

All characteristics are measured and averaged over specified period (from 10 sec up to 1 hour) and transferred to the remote control unit via RS-232 serial port. The number of lanes to inspect is up to 6. The system is able to work at daytime and night-time. The presence of anchor objects in the camera's field of view is indispensable for high accuracy measurements.

The principal methods of processing: composition of static and motion filters for vehicle detection, artificial neural networks for shape based recognition of vehicle type, 3D model of scene for accurate speed estimation.

Additional options:

- Determination of vehicle's license number (additional TV cameras are needed);
- Registration of traffic regulations violations (speed excess, transit on red traffic light etc.) and transferring of vehicle image and license number to traffic control center;
- Continuous tracking of selected vehicle through a set of consequent "TrafficMonitor" systems;
- Detection of non-moving vehicles;
- Traffic jam detection and its parameters (queue length, jam time etc.) calculation.

About RC "Module" (www.module.ru): Research Center "Module" is a leading Moscow-based fabless semiconductor company which designs high-end processor architectures, embedded computers and application software for DSP and artificial neural networks. RC "Module" also provides system and ASIC/SIP design services to a variety of telecommunication and computer-related OEMs manufacturers.



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