

# Data Processing and Application Software Development Capabilities



## BALİSTİKA®2010

BALİSTİKA that precedes BALİSTİKA® 2010 is an automated ballistic image analysis and recognition system for bullets and cartridge cases. Earlier work in BALİSTİKA dates back to 1995. BALİSTİKA project began to come up with a system for archiving bullets and cartridge cases as a primary purpose. Later, it turned into a system that can generate 3D bullet and cartridge case surfaces and make automated comparison of these surfaces. The system, which was installed in 1999, is currently used by Gendarmerie Forensic Department of Turkey.

BALİSTİKA® 2010 is a project to upgrade the capabilities of every aspect of BALİSTİKA system to a level to fulfill the ballistic identification needs of the entire country and it is launched to develop a pioneering product throughout the world. The project, which was launched in 2008 for General Directorate of Security, Criminal Police Laboratories, is carried out within TÜBİTAK Support Program for Research Projects of Public Institutions with the support of forensic ballistics experts. This system is distributed and scalable and has the capabilities of high performance computing and storage.

The high resolution data acquisition units developed within the project are installed at multiple cities of Turkey. 3D surfaces of ballistic items generated by these data acquisition units are transmitted to a central server where surface comparisons are made using GPU computing clusters in this center location. Comparison results are presented to users by an advanced 3D bullet and cartridge case visualization interface.

## KAVTAN

Radio and Television Supreme Council of Turkey (RTÜK) monitors and archives all broadcast material in Turkey.

The amount of data is beyond human capacity for full monitoring. KAVTAN Project provides automatic detection and inspection ability of certain visual and aural concepts to the SKAAS System.

The system aims to automatically detect violence, terrorist activity, and human existence and nudity concepts.





## RTÜK SKAAS Project

Digital Recording, Archive and Analysis System (SKAAS) Project, which is supported by the Radio and Television Supreme Council of Turkey (RTÜK), is developed to digitally record, monitor and analyze radio and television broadcasts at RTÜK Headquarters. TÜBİTAK UZAY performed the specified tasks below in the scope of the SKAAS Project.

**Video Copy Detection:** This application enables the user to search visually similar videos to a given video clip in a large video database.

**Advertorial Analysis:** Location of advertorials is found using jingles and logo changes in the radio and television broadcasts.

**Video Text Recognition:** The system detects and recognizes all words overlaid onto the TV broadcast.

**Audio Keyword Capture:** This application detects the location of single keywords or series of keywords in audio streams of radio and television broadcasts independent of the speaker.



## CONTROLS:

### Comparisons to maintain Traceability for Optical Sensors

The CONTROLS project is sponsored by European Space Agency (ESA) and the prime contractor is the National Physical Laboratory (NPL) in UK.

The aim of the project is to:

- define a test site that meets the basic features needed for the calibration / validation of Earth observation satellite images,
- disseminate papers on methodologies and guidance of the use of the test sites for calibration / validation requirements in content with the Global Monitoring for Environment and Security (GMES),
- define all the features of the Tuz Gölü test site as an absolute radiometric calibration test site.

Since 2008, every year TÜBİTAK UZAY is coordinating and conducting field campaigns in Tuz Gölü to provide data for absolute radiometric calibration studies with the participation of international space agencies, such as NASA, ESA, JAXA. The data from these measurements are processed and scientific publications are disseminated related to calibration studies.

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