Intelligent Video Analytics

Analyzes real-time and recorded video streams of monitored environments, generating video metadata about moving objects or events, which provides invaluable information to law enforcement or first responders. Video analysis also offered the technology based on artificial intelligence and deep learning, which can detect and identify abnormal sounds, such as screaming, glass breaking, and explosions, and even broadcast warning messages, commercializing the world's first CCTV system that can watch, listen, and speak.

Abnormal Behaviour Detection

Support detection of **Intrusion, violence, collapsing, loitering, object tracking, dumping, theft, falling/drowning** (anti-suicidal).

Smart Search

Provides highspeed scanning by simultaneous, multi-level analysis provided by analytics processes. With the help of wide range of filters such as category/size/speed/ direction/density/color.

Fire Detection

Discover fires early for the safe evacuation of occupants. Early detection also plays a significant role in protecting the safety of emergency response personnel.

Smoke Detection

Automatically senses the presence of smoke, as a key indication of fire, and broadcast warning messages to the operator or staff operation.

Intelligent Tunnel Accident Detection

Help to prevent and detect danger such as fallen objects, wrong way driving, fire, smoke, pedestrians and stopped cars in tunnels. Also, it can provide traffic counts statistics by hour, day, week, and month.
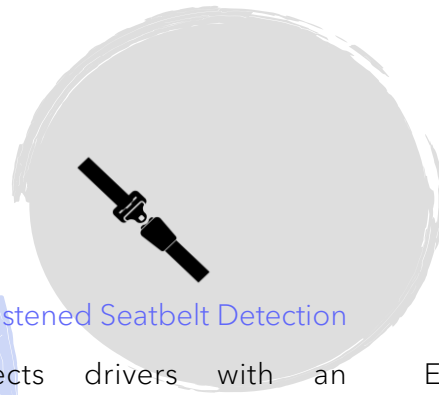
Intelligent Water Level Monitoring

Monitors and measures water levels of rivers, reservoirs, dams, etc. with video in real time. When dangerous levels are detected, it automatically alerts personnel.

Some people call this artificial intelligence, but the reality is this technology will enhance us. So instead of artificial intelligence, I think we'll augment our intelligence.
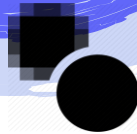
- Ginni Rometty, Executive Chairman of IBM

Unfastened Seatbelt Detection

Detects drivers with an unfastened seatbelt at tollgates and warns them with electronic signs and speakers, operable in conjunction with law enforcement measures.

Intelligent Video Restoration

Enhances and restores video output from CCTV in real time, in case of inclement weather: i.e., heavy rain, heavy snow, and poor air quality (yellow dust etc.).

Face/Object Masking

Provides automatic face/object detection and face/object masking (full and facial).

Video Export Management

All video information will be encrypted to prevent illegal copying of video recording. Also support video export management to generate statistics by export purpose.

Auto Tracking

Link a PTZ camera to multiple fixed cameras, support pan, tilt, zoom in/out function when an object is detected.

Abnormal Sound Detection

Collects various sounds and analyzes them through deep learning, discerning abnormal sounds such as screaming, vehicle crashes, etc. The direction of the sound source will be analyzed and immediately points CCTV cameras (PTZ control) toward it, thereby minimizing crime occurrence in blind spots.
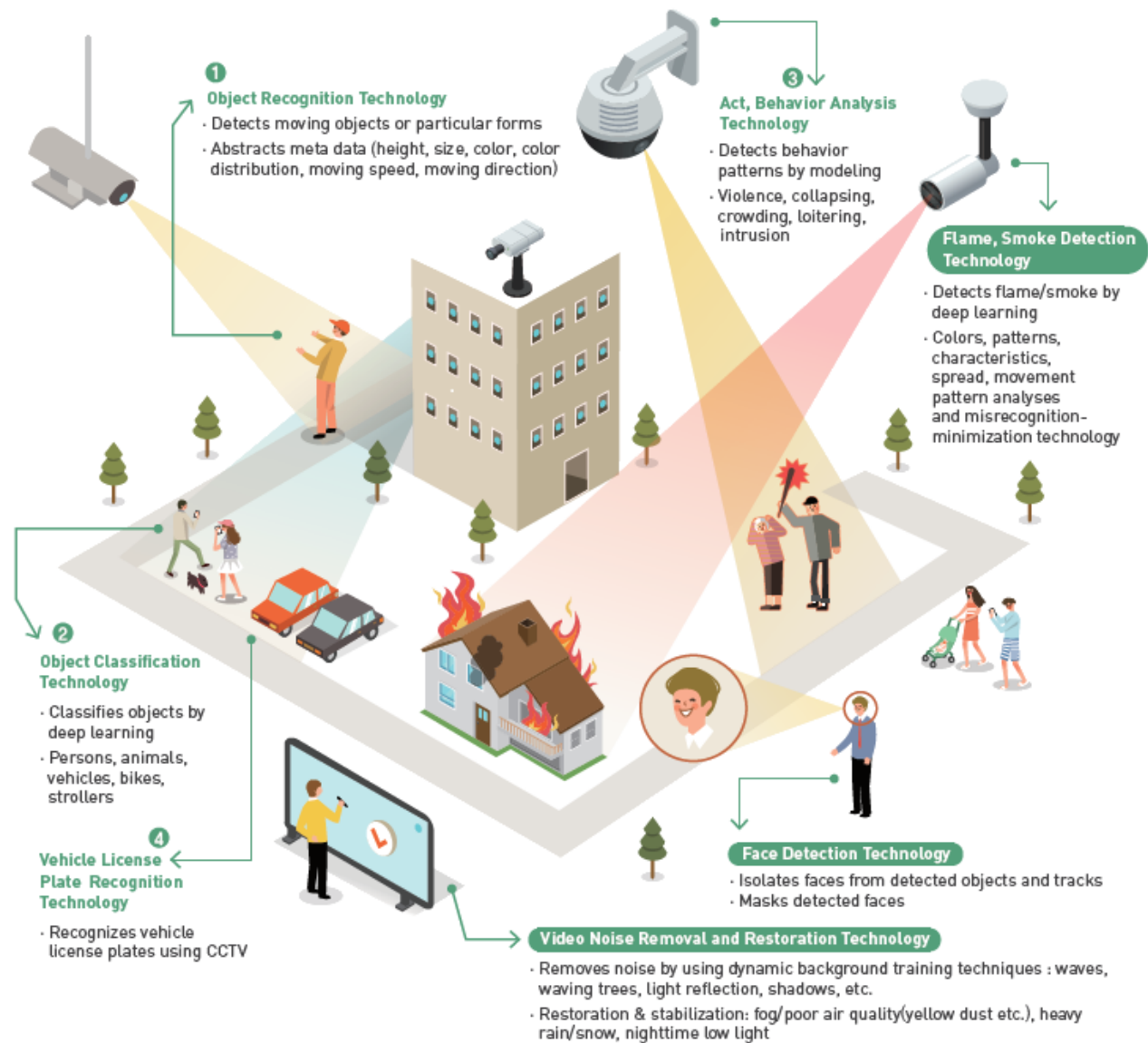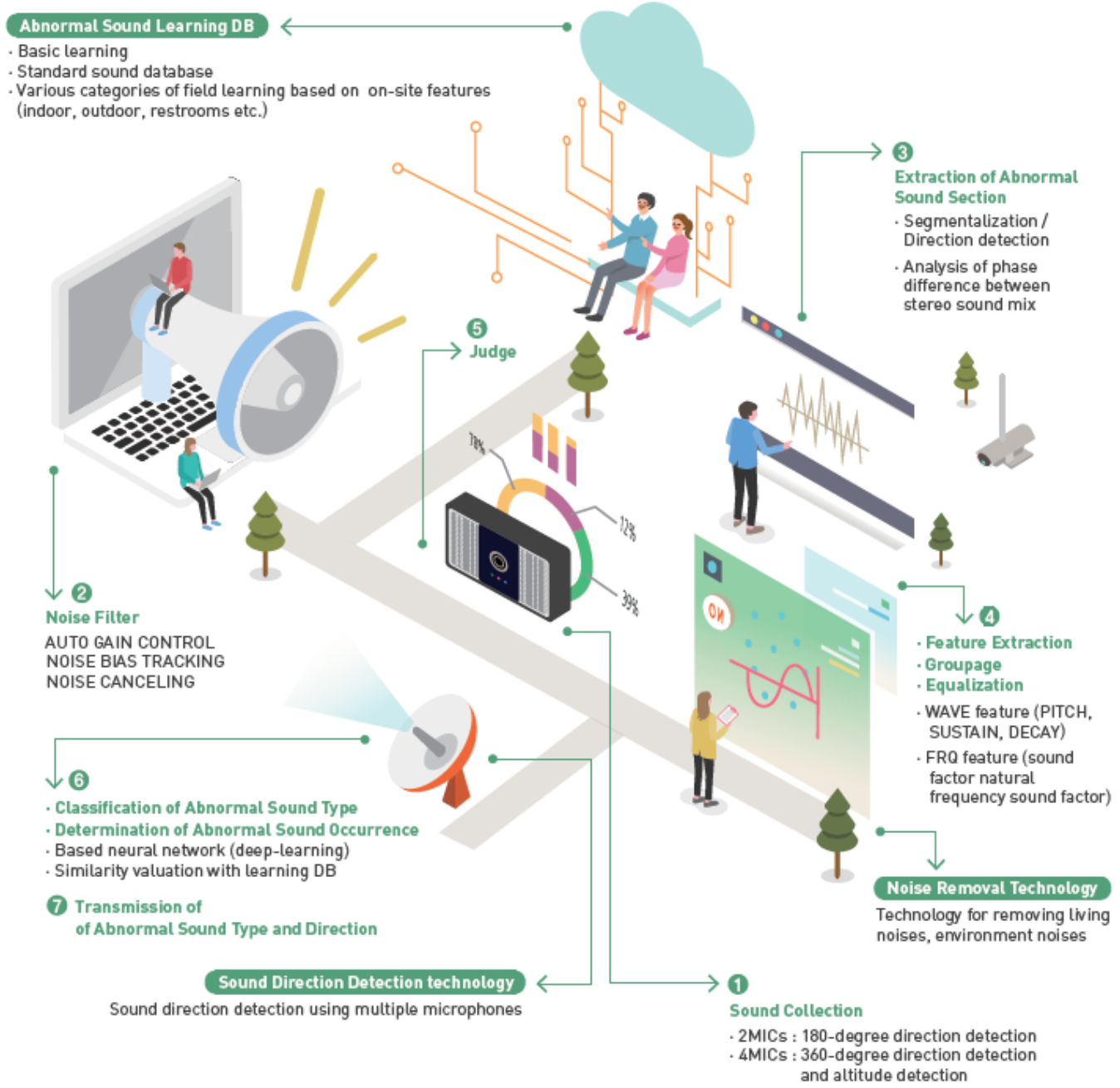
Video Counting

Provides traffic (human and vehicle) count statistics. For vehicle on the roadway, we can do lane-by-lane count and sorts the statistics by hour, day, week, and month.
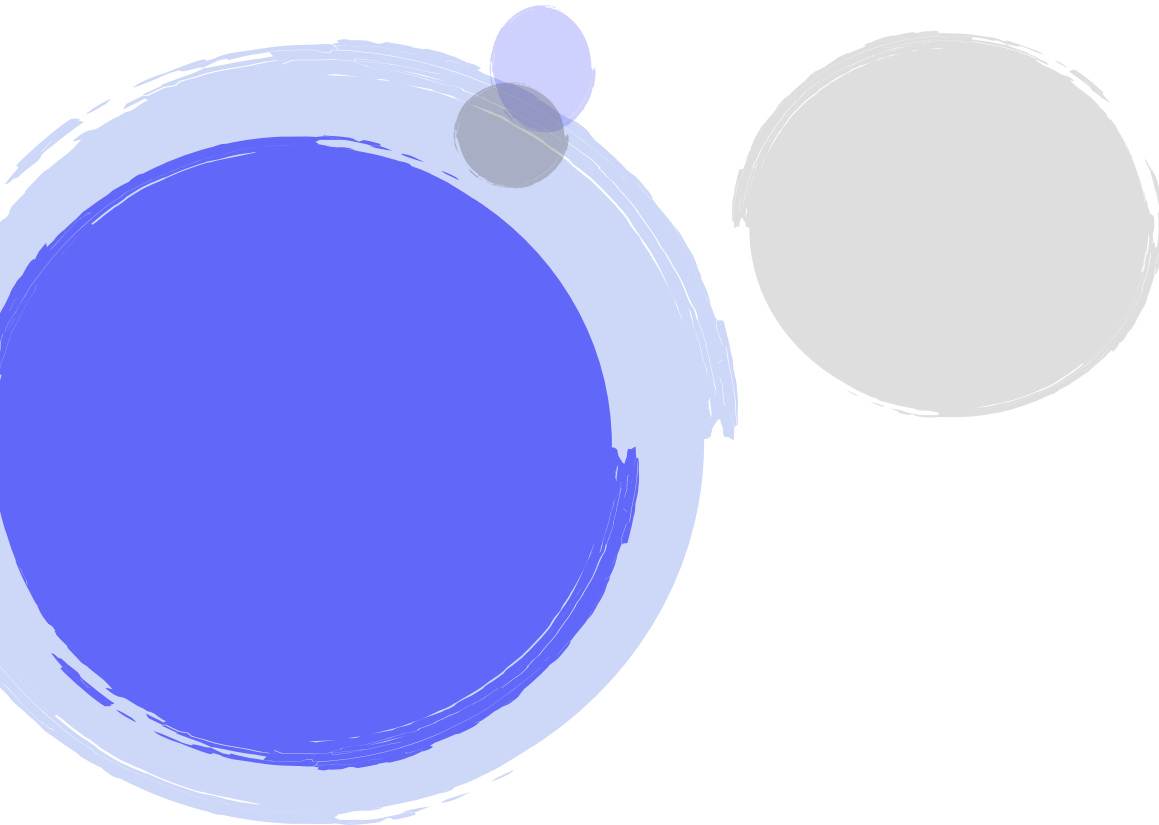
Video Analytics

❶ Object Recognition Technology
· Detects moving objects or particular forms
· Abstracts meta data (height, size, color, color distribution, moving speed, moving direction)

❸ Act, Behavior Analysis Technology
· Detects behavior patterns by modeling
· Violence, collapsing, crowding, loitering, intrusion

Flame, Smoke Detection Technology
· Detects flame/smoke by deep learning
· Colors, patterns, characteristics, spread, movement pattern analyses and misrecognition-minimization technology

❷ Object Classification Technology
· Classifies objects by deep learning
· Persons, animals, vehicles, bikes, strollers

❹ Vehicle License Plate Recognition Technology
· Recognizes vehicle license plates using CCTV

Face Detection Technology
· Isolates faces from detected objects and tracks
· Masks detected faces

Video Noise Removal and Restoration Technology
· Removes noise by using dynamic background training techniques : waves, waving trees, light reflection, shadows, etc.
· Restoration & stabilization: fog/poor air quality(yellow dust etc.), heavy rain/snow, nighttime low light

Sound Analytics

Abnormal Sound Learning DB
· Basic learning
· Standard sound database
· Various categories of field learning based on on-site features
  (indoor, outdoor, restrooms etc.)

❸ Extraction of Abnormal Sound Section
· Segmentalization /
  Direction detection
· Analysis of phase
  difference between
  stereo sound mix

❺ Judge

❷ Noise Filter
AUTO GAIN CONTROL
NOISE BIAS TRACKING
NOISE CANCELING

78%

12%

39%

❹
· **Feature Extraction**
· **Groupage**
· **Equalization**
· WAVE feature (PITCH,
  SUSTAIN, DECAY)
· FRQ feature (sound
  factor natural
  frequency sound factor)

❻
· **Classification of Abnormal Sound Type**
· **Determination of Abnormal Sound Occurrence**
· Based neural network (deep-learning)
· Similarity valuation with learning DB

**❼ Transmission of
     of Abnormal Sound Type and Direction**

Noise Removal Technology
Technology for removing living
noises, environment noises

Sound Direction Detection technology
Sound direction detection using multiple microphones

❶ Sound Collection
· 2MICs : 180-degree direction detection
· 4MICs : 360-degree direction detection
          and altitude detection

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