

## **1: Image and signal processing**

- .001: noise removal, signal and pattern enhancement
- .002: normalization, restoration, deformation and distortion
- .003: affine transformation
- .004: colour image processing, color quantization
- .005: image and signal compression
- .006: image segmentation
- .007: texture analysis, segmentation, matching and retrieval
- .008: image fusion
- .009: Digital geometry and mathematical morphology

## **2: Shape feature extraction and representation**

- .001: skeletonization, thinning
- .002: edge/line detection
- .003: corner detection
- .004: curves, curvature
- .005: convex hull, polygonal analysis
- .006: geometrical features and analysis
- .007: contour analysis
- .008: chain codes and new shape and signal coding methods
- .009: mesh and pyramid representation
- .010: graph-based representation
- .011: other shape representation and inference methods

## **3: Image and video understanding**

- .001: surface analysis, matching
- .002: scene analysis and reconstruction
- .003: content-based image matching and retrieval
- .004: camera-based imaging, tele-imaging, remote sensing, SAR imaging
- .005: 3-D imaging, stereo pairs, 3-D and volumetric analysis
- .006: video processing, segmentation, analysis, and annotation
- .007: Illumination and reflectance modeling
- .008: Perceptual organization
- .009: Computational Photography and Video
- .010: Motion and Tracking
- .011: Shape-from-X
- .012: Structure from Motion
- .013: Object Detection, Recognition, and Categorization
- .014: Event and Activity Recognition
- .015: Gesture and Interaction Analysis
- .016: Cognitive and embodied vision
- .017: Expression Analysis
- .018: People and body part tracking
- .019: Depth Image Analysis
- .020: Crowd Analysis

## **4: Statistical feature extraction and analysis**

- .001: feature extraction, representation, reduction, selection
- .002: dimensionality reduction and manifold learning
- .003: principal component analysis
- .004: feature transformations, wavelet analysis

## **5: Classification and decision processes**

- .001: clustering

- .002: classification techniques
- .003: combination of classifiers, ensembles, multi-classifiers
- .004: sampling, relevance feedback, and semi-supervised learning
- .005: decision trees
- .006: discriminant analysis
- .007: distance measurement, analysis, metric, transforms
- .008: hidden Markov models, Markov random fields
- .009: neural networks, radial basis functions
- .010: support vector machine, kernel functions
- .011: genetic algorithm
- .012: syntactic pattern recognition methods
- .013: Bayesian models and belief networks
- .014: regression and other statistical modeling techniques
- .015: rule based and logic based reasoning
- .016: other learning algorithms and training procedures
- .017: performance evaluation, benchmarking procedures and systems
- .018: pattern recognition software tools

#### **6: Character/word recognition and document analysis**

- .001: slant/skew analysis, detection, correction
- .002: extraction of characters and texts from documents, images, and video
- .003: character and symbol recognition
- .004: document, form analysis and recognition
- .005: handwriting recognition, on-line and off-line
- .006: signature verification and writer authentication
- .007: language identification, linguistic modeling and analysis
- .008: error correction and contextual analysis, post-processing
- .009: analysis of engineering drawings, line drawings, charts, and graphics
- .010: text analysis, text mining, and textual information retrieval

#### **7: Biometrics**

- .001: face and facial feature recognition
- .002: fingerprint analysis and identification
- .003: recognition of finger, palm, footprint, and other body parts
- .004: gait and gesture analysis
- .005: iris detection and recognition

#### **8: Other applications**

- .001: robotics, intelligent mobile machines, sensors and sensor networks
- .003: medical image processing, segmentation, feature/object extraction
- .004: medical diagnosis and medical signal processing
- .005: bioinformatics
- .006: speech recognition and speaker identification
- .007: music and sound analysis
- .008: analysis of streams and other time-dependent signals
- .009: industrial inspection, defect and fault diagnosis, automation
- .010: financial and economic applications
- .011: other pattern modeling and anomaly detection applications
- .012: data mining from databases