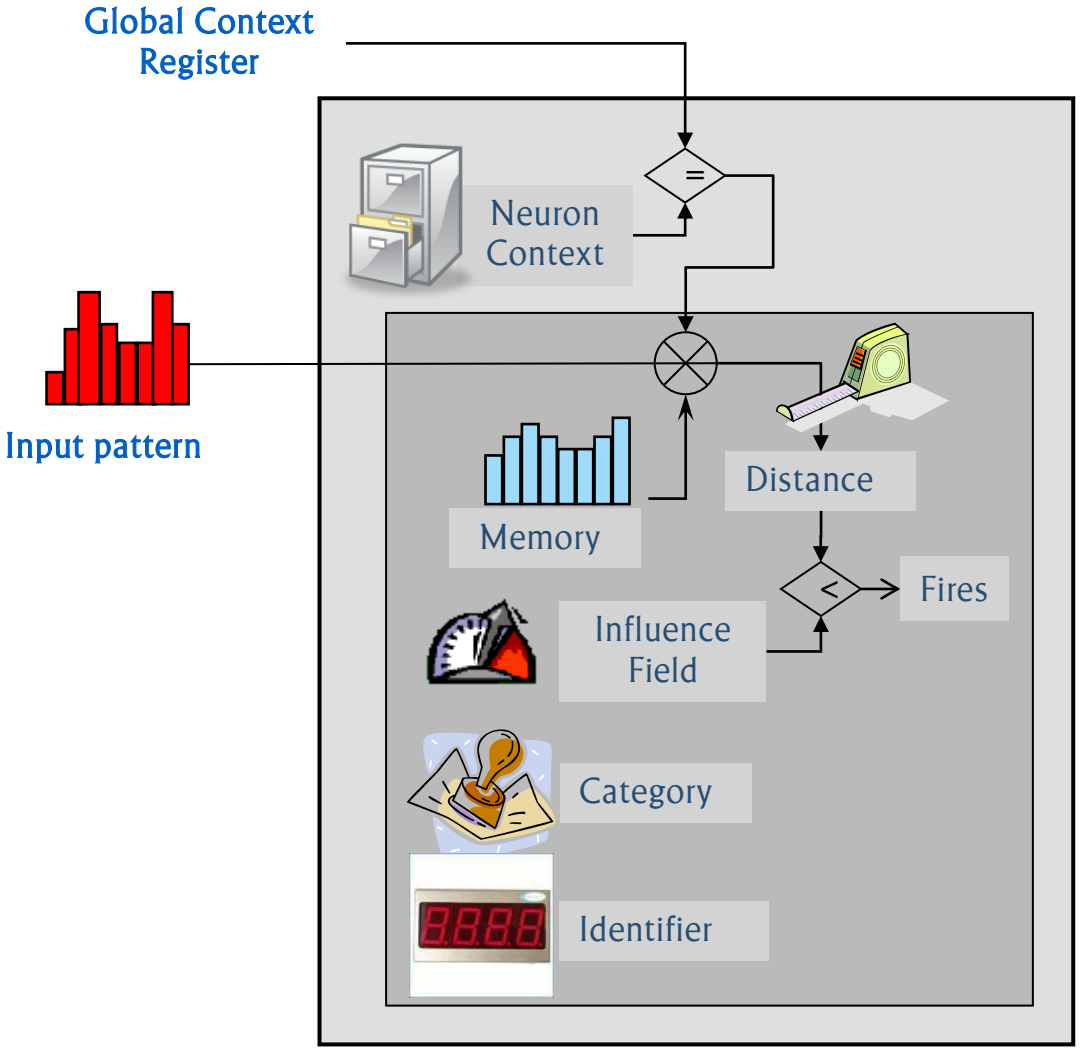
Usage of the Context Register

- CogniMem™ supports up to 127 different contexts
- A context is equivalent to an expert trained to recognize specific types of patterns with a specific expertise
- A context is equivalent to a recognition engine
- Multiple contexts can work together to reinforce the global and final decision
- The allocation of neurons to a given context is made dynamically as examples are taught. No need to partition the network ahead of time

Context = Neuron Idle or Active



If Neuron Context <> Global Context ➔ Neuron is IDLE

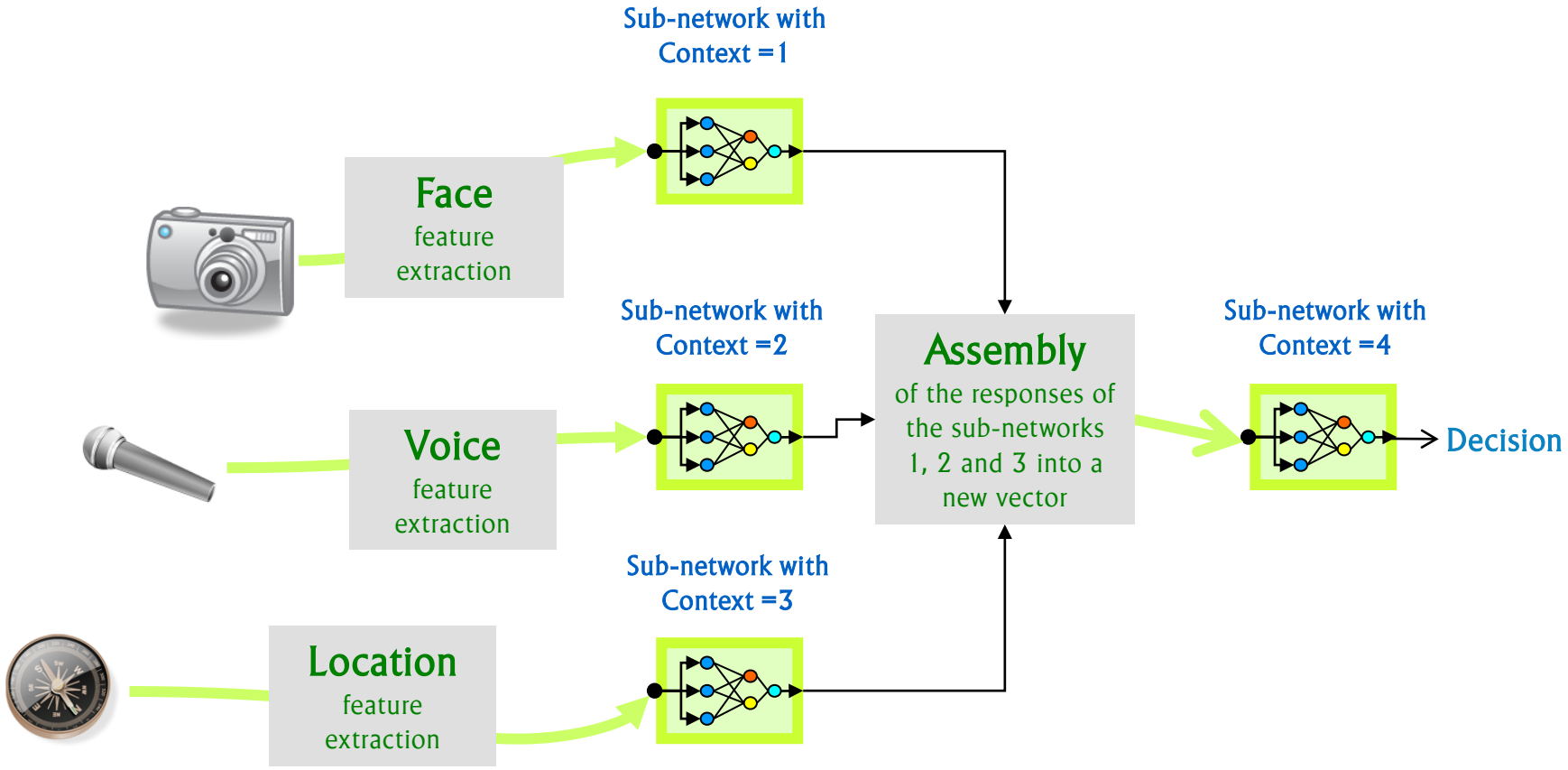
If Neuron Context = Global Context ➔ Neuron is ACTIVE

- ♦Reacts to input pattern
- ♦Updates its distance register
- ♦Compares with its influence field
- ♦Broadcasts its category if fires

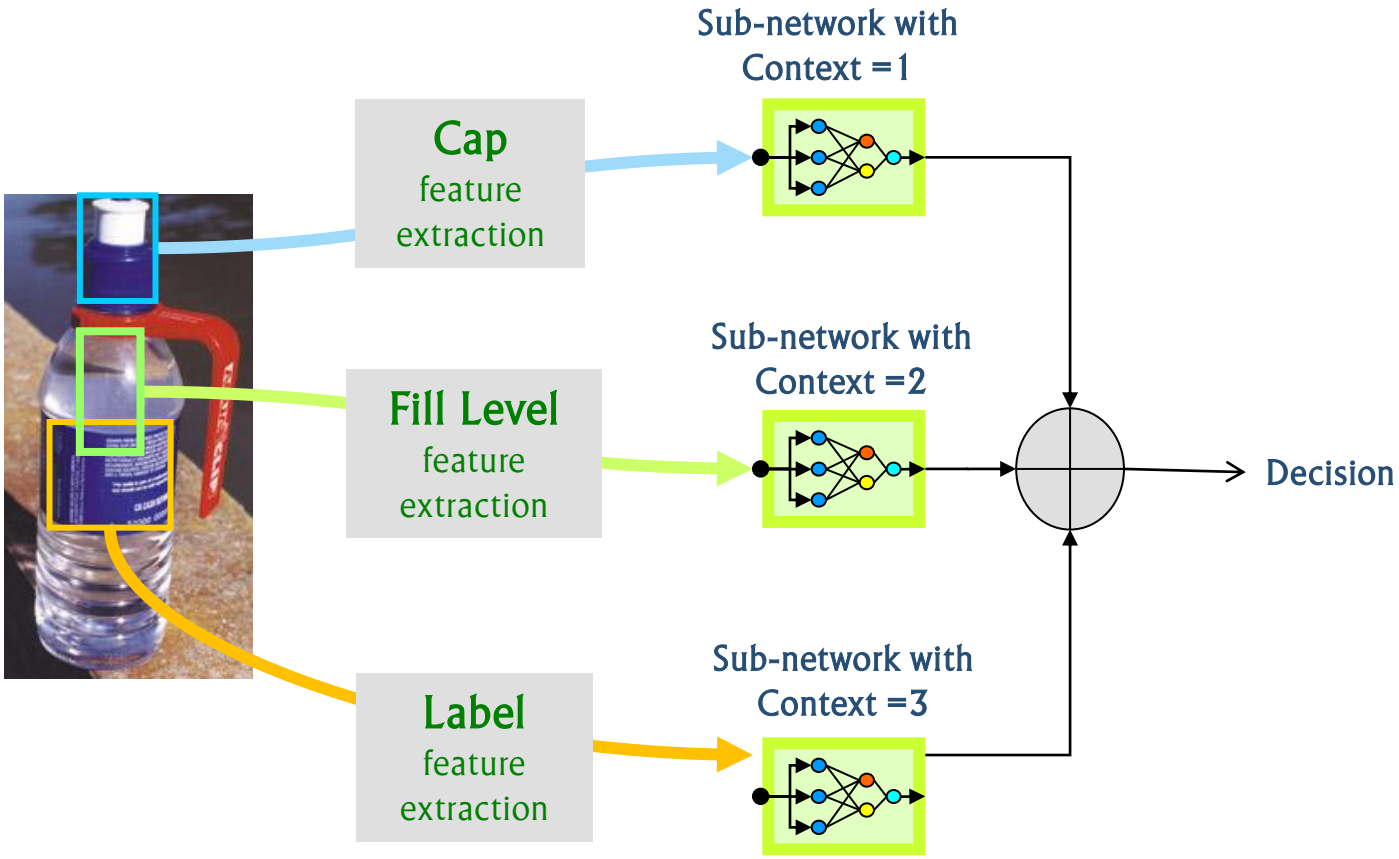
If Global Context =0, all neurons are active

The neuron Ready-To-Learn in the chain of neurons always inherits the Global Context when it gets committed

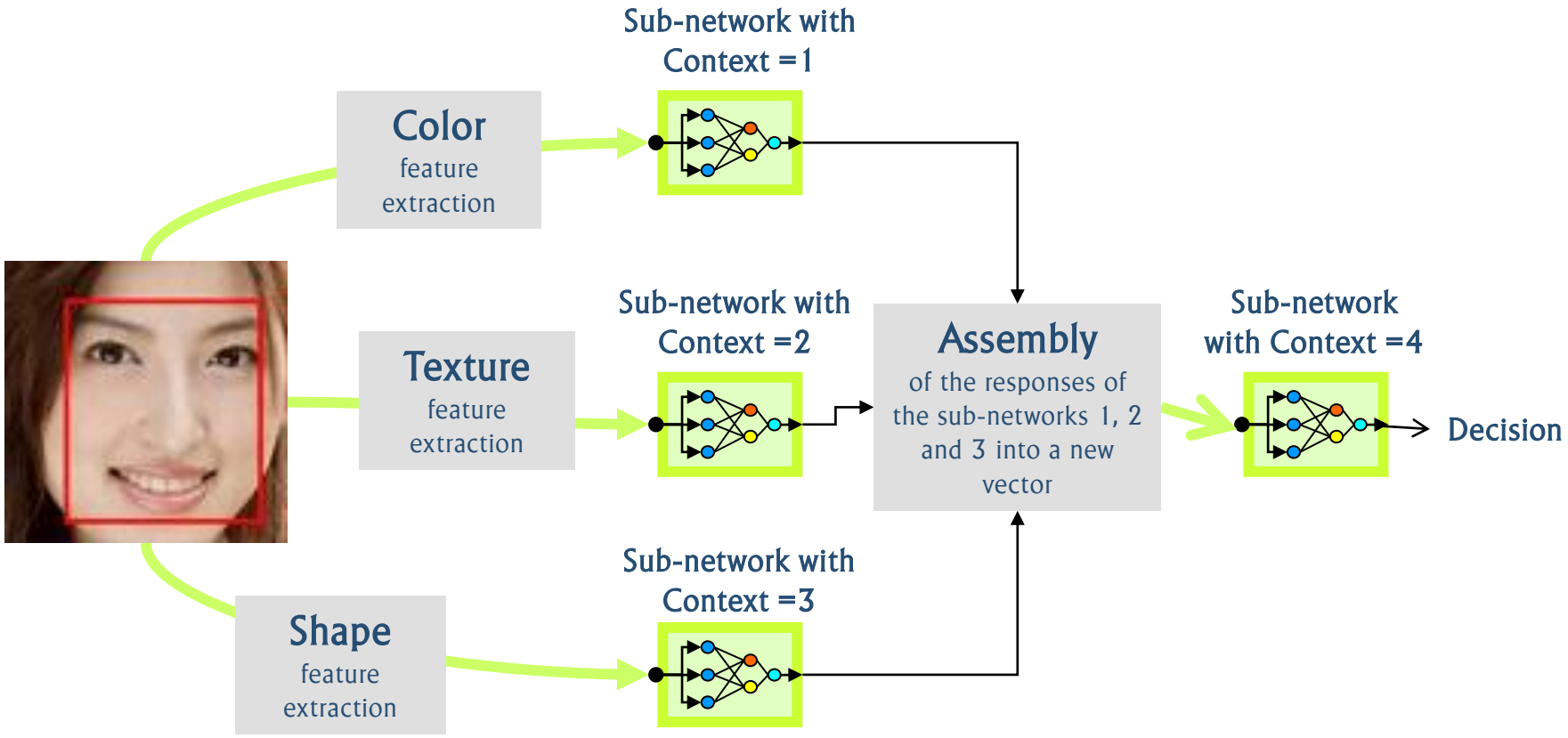
Example 1: One Data Source = One Context



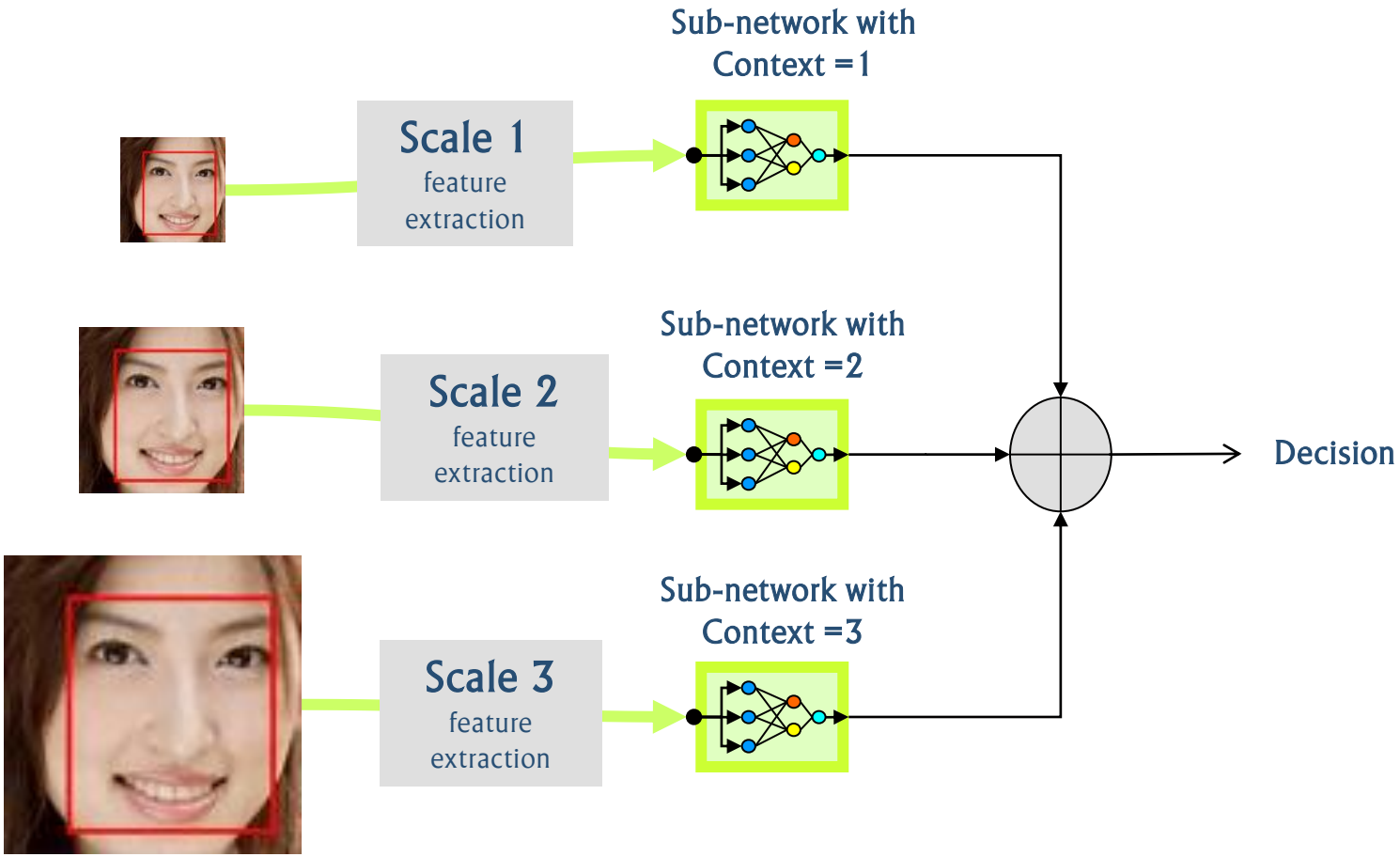
Example 2: One Region of Interest = One Context



Example 3: One Feature = One Context

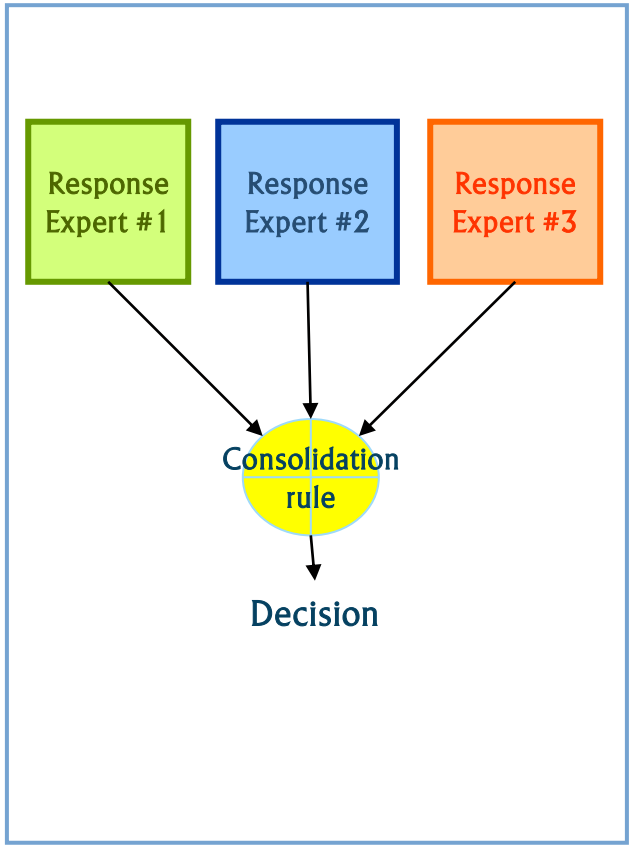


Example 4: One Scale = One Context

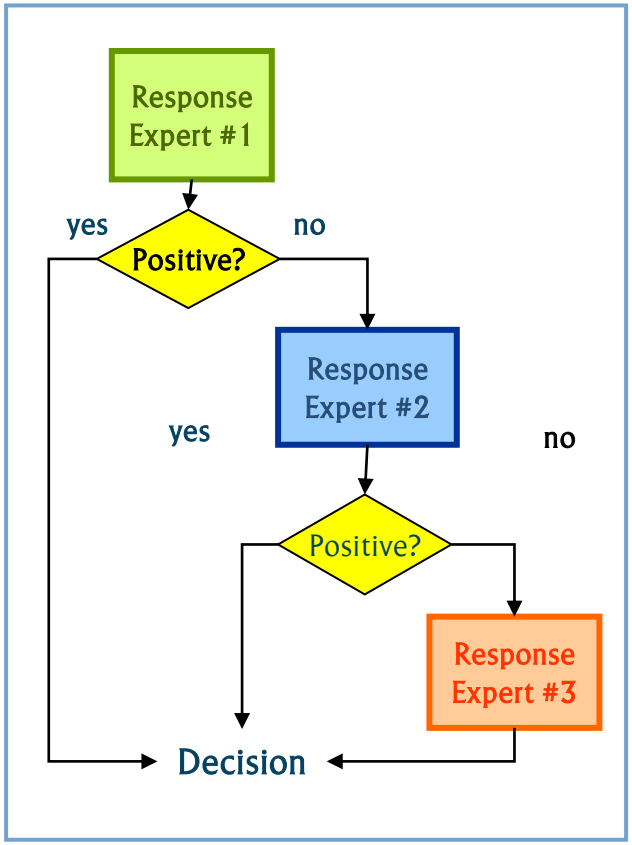


Consolidation Between Contexts

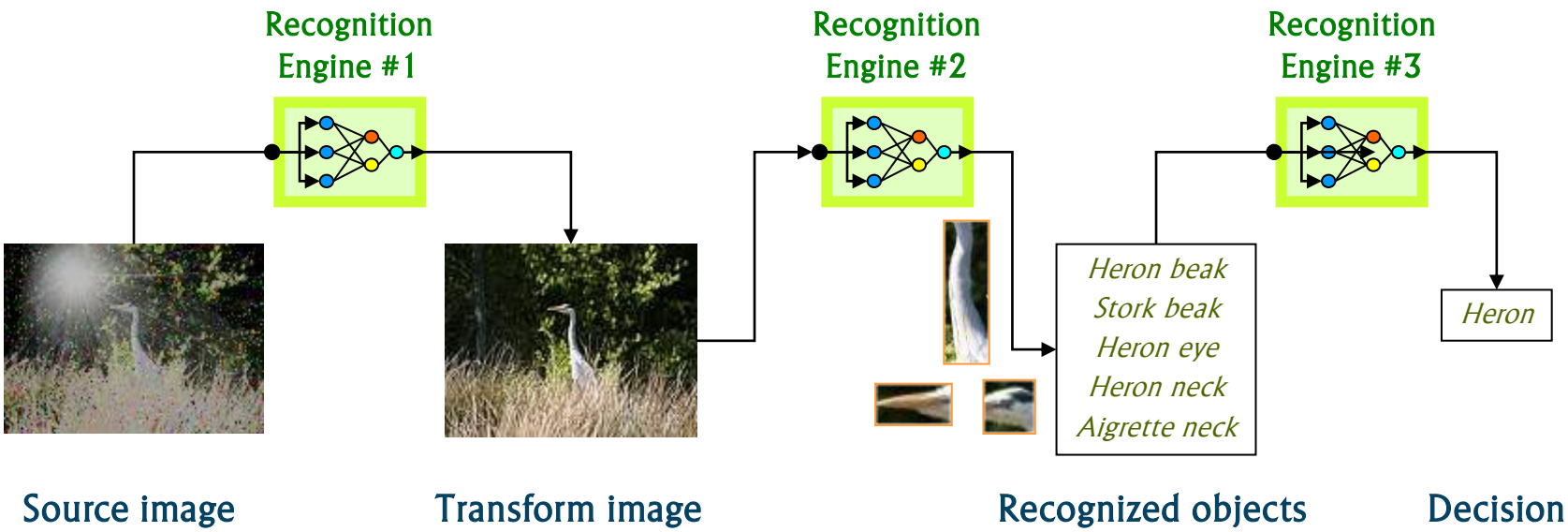
Combinatorial



Hierarchical



Plurality of Contexts for Robust Decision



Engine for primitive block conditioning
Trained for
- Adaptive gain control
- Noise removal,
- Edge extraction
- Compression, more

Engine for object recognition
Trained for
- Object identification
- Anomaly detection
- Target location, more

Engine for decision making
Trained for
- Data mining
- Clustering
- Contextual localization