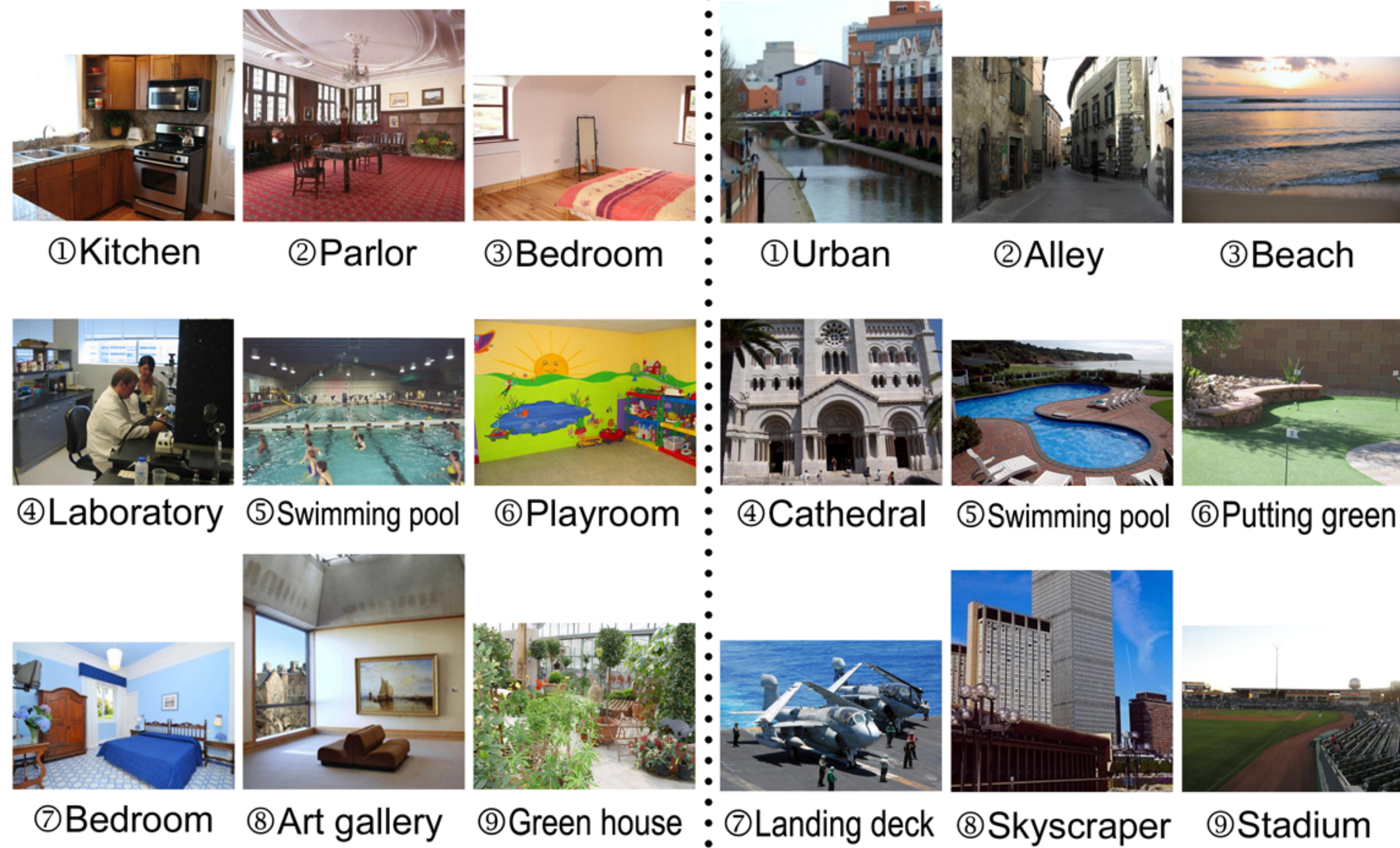


Large-scale Indoor/Outdoor Image Classification via Expert Decision Fusion (EDF)

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Indoor

Outdoor



Challenges:

- Big visual data (Volume, Variety and Velocity);
- Individual approaches are not sufficient;

Previous arts:

- Low-level local feature extractions;
- Have different perspectives;
- Two-stage systems(from local to global);
- Accuracy drops when applied to large dataset;

Motivations:

- Individual experts have different data preferences;
- Data grouping can reduce data diversities;
- Stacking provides strong complementariness;
- Structured systems are robust;

Contributions:

Evaluate 6 existing experts; Propose 3 new experts; Propose EDF to handle diverse big visual data; Experiments with a large data.

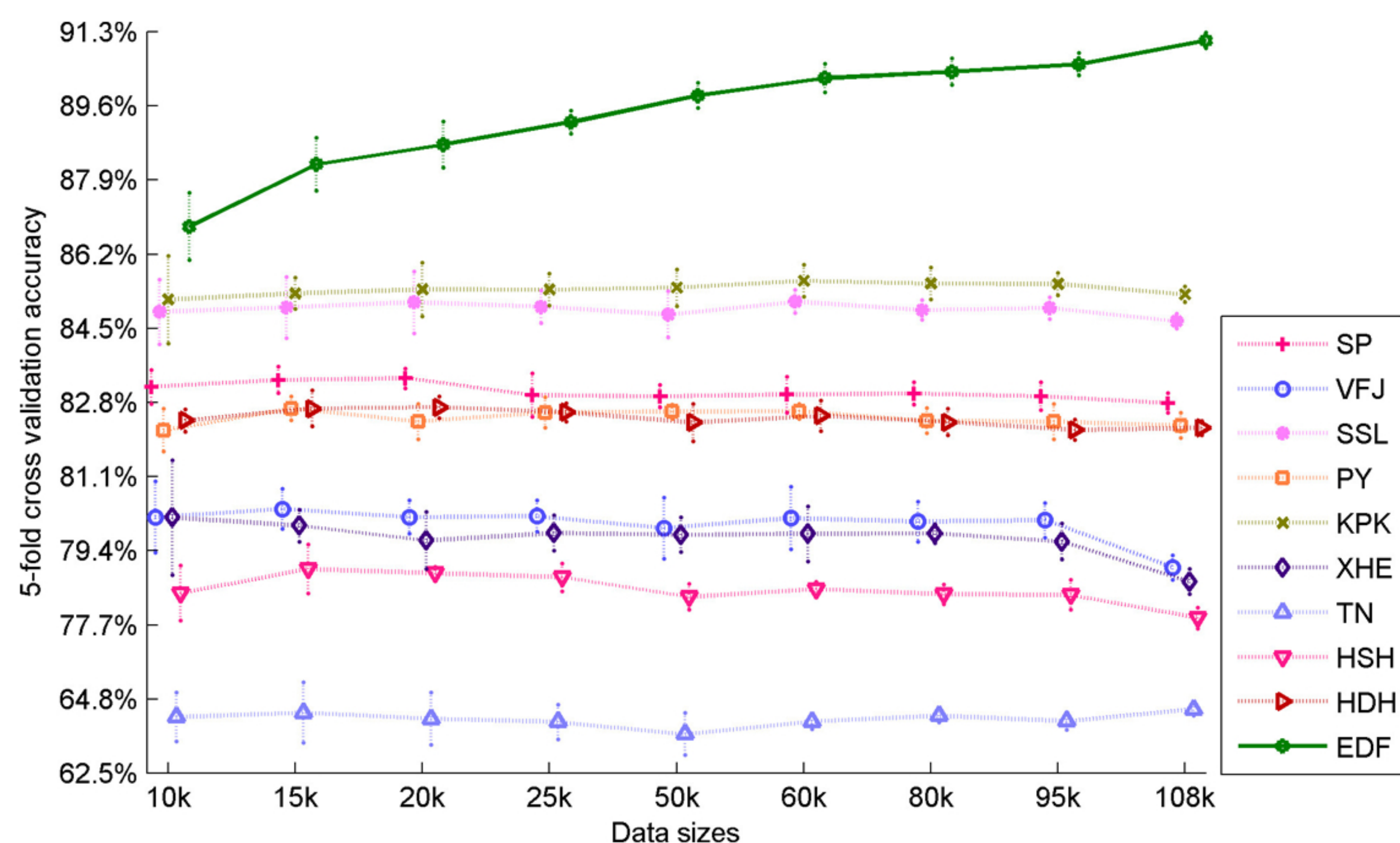
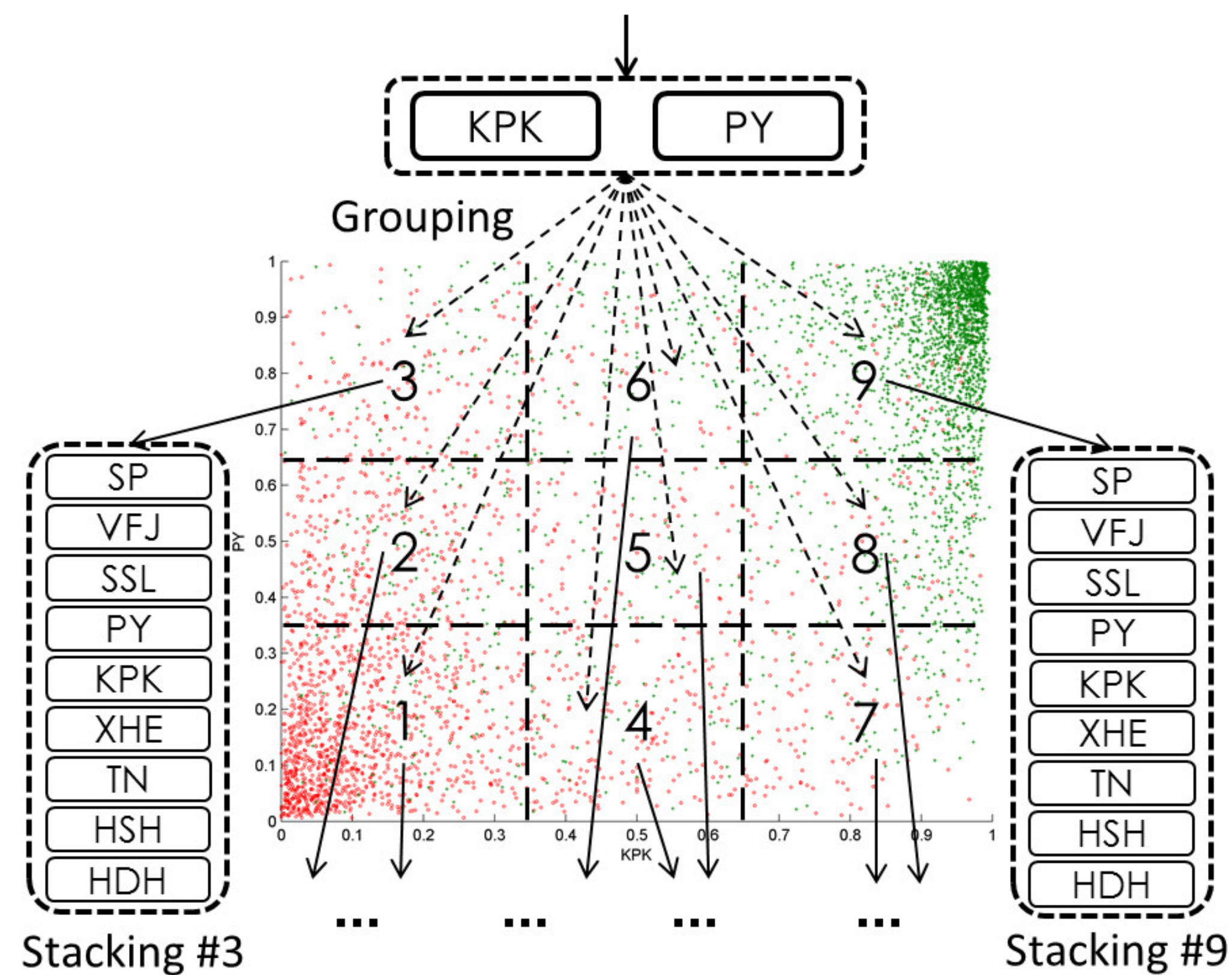
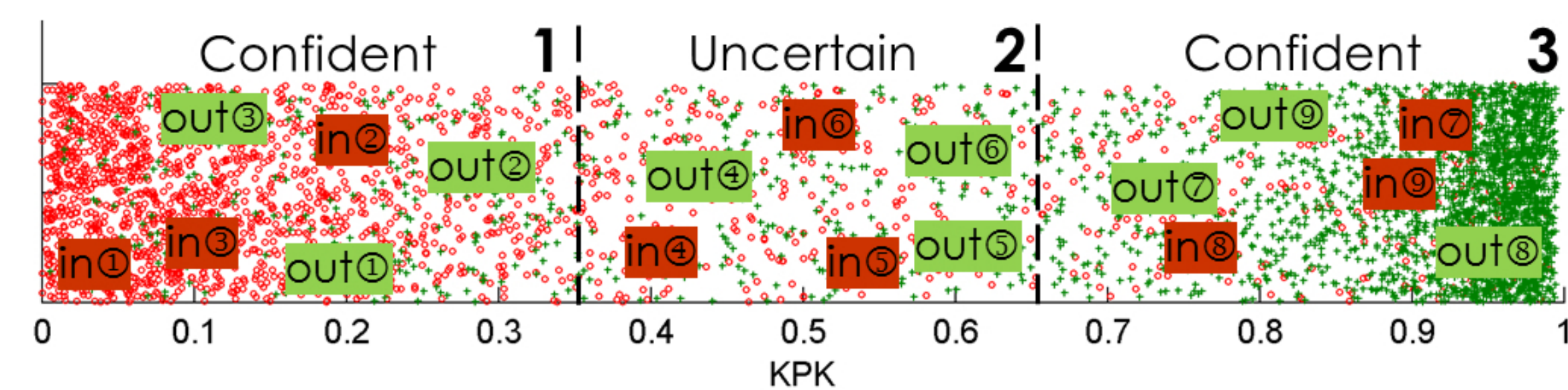
Expert Decision Fusion (EDF):

Stage one: (Data grouping)

Grouping samples into 9 subspaces wrt. experts' confidences;

Stage two: (Decision stacking)

Fusing decisions from 9 experts within corresponding subspaces;



Dataset:

- SUN (CVPR2010);
- 108,754 images, 397 categories;
- Manually labeled into indoor/outdoor;

Experimental results:

- Best individual expert: KPK (85.30%);
- EDF system (91.15%);
- Increasing performance observed with larger data;

Conclusions and future works:

- Data grouping efficiently reduces data diversities;
- Stacking provides robust accuracy improvement;
- Apply even larger datasets;
- Semantic-level features will handle failure cases;
- Grouping using more experts;