**Determinantal Point Process (DPP):**
- DPP is used for subset \((y)\) selection
- Summarization is modeled as subset selection
- Models negative correlations
- Successful in document summarization

**Formulation:**
- Partition the video into disjoint sets, \(Y_1 \ldots Y_T\)
- Construct kernel \(L\) for shots in the partition
- Denote by \(Y = \{1, 2, \ldots, N\}\) the shots in the partition:
  - \(DPP\) defines a discrete probability distribution over a subset selection Variable \(Y\),
  \[ P(Y = y) = \frac{\det(L_y)}{\det(L + I)}, \quad \forall y \subseteq Y, \]
- Two layers of DPPs for each partition:
  1) \(Z\)-layer: query-relevant summarization
  2) \(Y\)-layer: contextual summarization
- Condition DPPs through time/hierarchy

**Experimental Setup:**
- Train on 3 videos
- Test on the remaining video

**New evaluation metric:**
- Hitting recall: ratio of query-relevant shots in the system summary to GT.

---

**Experimental Setup/Results**

<table>
<thead>
<tr>
<th>Dataset/Training/Testing</th>
<th>Input:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) UT Egocentric</td>
<td>Video</td>
</tr>
<tr>
<td>2) TV Episodes</td>
<td>Query</td>
</tr>
</tbody>
</table>

**Advantages:**
- Each layer has its own DPP kernel
- Kernels are learned during training
- Useful for streaming videos