

## THESIS INTRODUCES NOVEL TRAFFIC CLASSIFICATION FRAMEWORK:

- 1 FRAMEWORK FOR GENERATING OPTIMIZED REALTIME TRAFFIC CLASSIFICATION ALGORITHMS
- 2 MULTILEVEL CLUSTERING USED FOR SPEED OPTIMIZATION AND TO AVOID PEAKING EFFECT
- 3 CUSTOM CLASSIFIERS FOR EACH CLUSTER DERIVED FROM STATISTICAL CLASSIFICATION ALGORITHM SPID
- 4 FRAMEWORK GENERATES CLASSIFICATION ALGORITHMS WITH OPTIMIZED STRUCTURE, PARAMETERS, FEATURES AND CUSTOM CLASSIFIERS USING GENETIC ALGORITHM
- 5 PROPOSED SEVERAL NOVEL CLASSIFICATION FEATURES AND STUDIED EFFECT OF FEATURE REPRESENTATION ON PRECISION OF CLASSIFICATION
- 6 EFFECTIVENESS EVALUATED ON TRACES OF REAL TRAFFIC AND COMPARED WITH SPID - IMPROVED PRECISION AND RECALL WITH SUBSTANTIAL SPEEDUP AND BETTER MEMORY EFFICIENCY

### ESTIMATION OF N TRUNCATED ENTROPY

$$H_n(\mathcal{U}) = \log(m) + \log(c) - e^{-c} \sum_{j=1}^{\infty} \frac{c^{j-1}}{(j-1)!} \log(j)$$

### COSINE SIMILARITY

$$\cos(\theta) = \frac{A \cdot B}{\|A\| \|B\|} = \frac{\sum_{i=1}^n A_i \times B_i}{\sqrt{\sum_{i=1}^n (A_i)^2} \times \sqrt{\sum_{i=1}^n (B_i)^2}}$$

### N TRUNCATED ENTROPY OF UNIFORM DISTRIBUTION

$$H_n(\mathcal{U}) = \frac{1}{m^N} \sum_{n_1 + \dots + n_m = N} \left[ \binom{N}{n_1 + \dots + n_m} \times \left( - \sum_{i=1}^m \frac{n_i}{N} \log \frac{n_i}{N} \right) \right]$$

FIGURE 3.1:  
OVERALL STRUCTURE DURING  
TRAINING PHASE

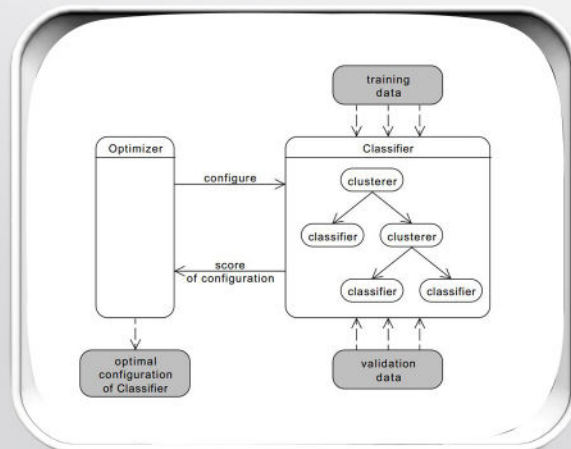


FIGURE 3.3:  
ACTIVITY DIAGRAM OF CLASSIFICATION

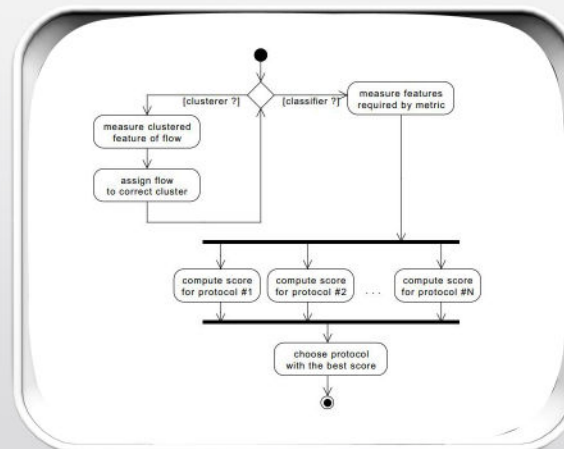


FIGURE 5.1:  
EXAMPLE HIERARCHY OF  
FINGERPRINT CONTAINER INSTANCES

