

# Advanced Topics of Algorithms

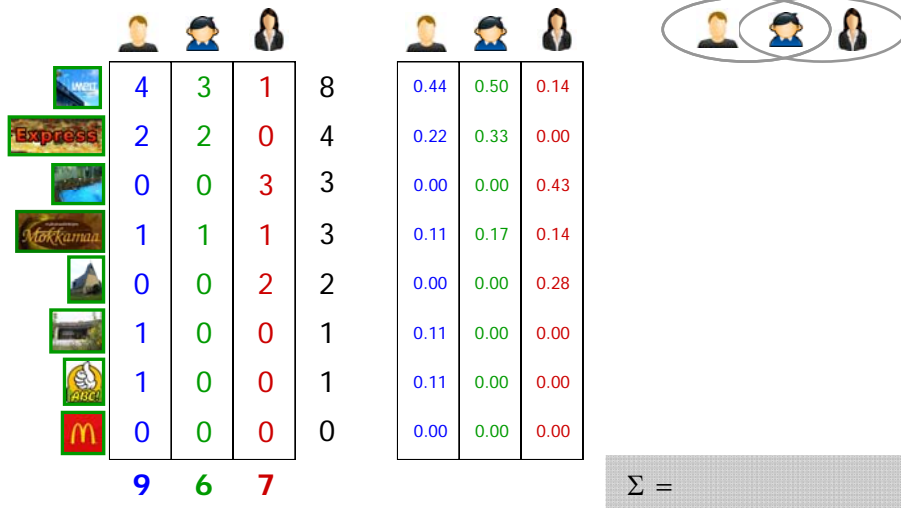
Tasks 3, 2.3.2016

- Below are three user's and their visit histories (frequencies) in eight locations. Calculate cross-entropies between Sam (the middle guy) and Tom and Sarah. Can you conclude which of them is more similar to Sam?

## Similarity calculations

Cross-entropy

$$H(q, p) = \sum_{i=1}^n \left( q_i \cdot \log \frac{q_i}{p_i} + p_i \cdot \log \frac{p_i}{q_i} \right)$$



- Select your favorite photo about Joensuu (taken by yourself or your friend). Then find a tool to compress the image by JPEG. Apply it with 10 different quality ratios and report the results as:

- File sizes measured as bit rates (bits per pixel).
- Visual error in scale 0-10 (0=perfect, 5=visible errors, 10=usless)

Plot the results similarly as in the rate/distortion-curve below.

