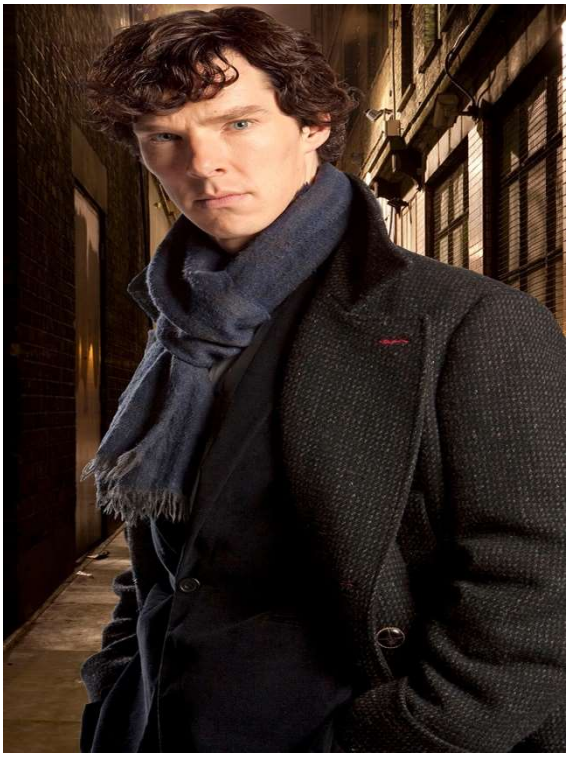
Aziz HACHICHA

&

Edam CHAABEN

2 IDSD 1



Sherlock Holmes Deception Detection Model

TF-IDF (Unigrammes)

$$\text{tfidf}(t,d) = \underbrace{\frac{f_{t,d}}{\sum_{t'} f_{t',d}}}_{\text{TF}} \times \underbrace{\log \frac{N}{n_t}}_{\text{IDF}}$$

- **Variables** :
  - $f_{t,d}$ = fréquence du terme t dans le document d
  - N = nombre total de documents
  - n_t = nombre de documents contenant t

N-grams (Bigrammes)

$$\phi_{\text{bigram}}(d) = \left(\mathbb{I}[(w_i, w_{i+1}) \in d]\right)_{(w_i,w_{i+1})\in\mathcal{V}^2}$$

- **Où** :
  - $\mathcal{V}$ = vocabulaire
  - $\mathbb{I}$ = fonction indicatrice

Modèle de Classification

Naïve Bayes Multinomial

$$\hat{y} = \arg\max_{y \in \{0,1\}} P(y) \prod_{i=1}^{|\mathcal{F}|} P(f_i \mid y)^{x_i}$$

- **Avec lissage Laplace** ($\alpha = 1$) :

$$P(f_i \mid y) = \frac{\text{count}(f_i, y) + \alpha}{\sum_f (\text{count}(f, y) + \alpha |\mathcal{F}|)}$$

Metrics :

	precision	recall	f1-score
0	0.76	0.95	0.84
1	0.94	0.73	0.82
accuracy			0.83
macro avg	0.85	0.84	0.83
weighted avg	0.85	0.83	0.83

$$\text{Précision} = \frac{TP}{TP + FP} \qquad \text{Rappel} = \frac{TP}{TP + FN} \qquad F_1 = 2 \times \frac{\text{Précision} \times \text{Rappel}}{\text{Précision} + \text{Rappel}}$$
