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LAMPIRAN

Lampiran 1. Hasil prediksi model Multinomial NB, Jurafsky NB, SVM, dan Hard Voting dengan Modifikasi

index	text	actual_label	nb_predicted	jurafsky_predicted	svm_predicted	hv_predicted
63	mengapa ovo tidak bisa di guna transaksi	0	1	0	0	0
81	baggus	2	2	0	0	0
94	terima kasih ovo kau ku stress sy terima kasih...	2	1	2	2	2
101	ok keluh di tanggapi	1	2	0	0	0
139	jumat moga aplikasi jozz	1	2	0	0	0
239	sudah lancar moga depan baik gak ada ganggu	2	2	0	0	0
249	kenapa minta bantu ade jawab sekali jujur suka...	0	0	2	2	2
315	okay	1	2	0	0	0
340	kadang kesel saat banget tp baik lama banget m...	0	0	2	2	2
366	tolong beli saldo driver grab sedia in minimum...	0	1	0	0	0
388	sukses selalu dana ku	2	0	2	2	2
457	kalau dana beneran tarik hadiah game ga bisa y...	0	1	0	0	0
510	aplikasi maling	0	0	2	2	2
514	ovo smuanya bisa mulus	2	2	0	0	0

Lampiran 2 Hasil prediksi Hard Voting dengan Modifikasi

text	actual_label	nb_predicted	jurafsky_predicted	svm_predicted	hv_predicted
sip oke	1	2	0	1	2
sip mayan lah	2	2	0	1	2
coba di indomart jual nasi goreng bakso goreng soto es dawet supaya sekali bisa bayar pakai	1	0	2	1	0
aplikasi sempurna kalau bisa bikin pos anggaran bulan bisa pisah pisah kalau dream saver	2	2	1	0	2
mau pake aplikasi makanya kasih bintang	1	2	1	0	2
sing gawe aplikasi mesti pikir soal ketiadaan bahasa	1	0	1	2	0
trims bantu	2	2	0	1	2

Lampiran 3. Preprocess Data

```
# Preprocess data

def cleaningText(text):
    text = re.sub(r'[0-9]+', '', str(text)) # remove number
    text = re.sub(r'\s+[a-zA-Z]\s+', '', str(text)) # remove single character
    text = re.sub(r'^[a-zA-Z]\s+', '', str(text)) # remove single character from the
start
    text = re.sub(r"(\.|\!|\+)", r"\1", str(text)) # Replace 3 or more consecutive
letters by 2 letter
    text = re.sub(r"(\b|\w)\1{1,2}\b", '', str(text)) # Remove 2 consecutive letters
    text = re.sub('[^a-zA-Z0-9]+\s*', '', str(text)) # remove all punctuations
    text = re.sub(r"\s+", ' ', str(text)) # Replaces any number of spaces with single
space
    text = text.lower() #all text
    return text

def tokenizingText(text):
    text = word_tokenize(text)
    return text

def removeStopwords(text):
    stopword = ['yang', 'yg', 'di', 'dan', 'itu', 'dengan', 'untuk', 'ini', 'dari', 'dalam',
'akan', 'pada', 'juga', 'saya', 'ke', 'karena', 'tersebut', 'mereka', 'lebih',
'kata', 'tahun', 'atau', 'saat', 'oleh', 'menjadi', 'orang', 'ia', 'telah',
'adalah', 'seperti', 'sebagai', 'bahwa', 'dapat', 'para', 'harus', 'namun',
'kita', 'dua', 'satu', 'hari', 'hanya', 'mengatakan', 'kepada', 'kami',
'setelah', 'melakukan', 'lalu', 'lain', 'dia', 'terjadi', 'menurut', 'anda',
'hingga', 'tak', 'baru', 'beberapa', 'ketika', 'jalan', 'sekitar', 'secara',
'dilakukan', 'sementara', 'tapi', 'sangat', 'hal', 'sehingga', 'seorang',
'bagi', 'besar', 'lagi', 'selama', 'antara', 'waktu', 'sebuah', 'jika',
'sampai', 'jadi', 'terhadap', 'tiga', 'serta', 'pun', 'merupakan', 'atas',
'sejak', 'membuat', 'memiliki', 'kembali', 'selain', 'tetapi', 'pertama',
'kedua', 'memang', 'pernah', 'apa', 'mulai', 'sama', 'tentang', 'bukan',
'agar', 'semua', 'sedang', 'kali', 'kemudian', 'hasil', 'sejumlah',
'persen', 'sendiri', 'katanya', 'demikian', 'masalah', 'mungkin',
'umum', 'bulan', 'bagian', 'bila', 'lainnya', 'terus', 'luar', 'termasuk',
'sebelumnya', 'bahkan', 'tempat', 'perlu', 'menggunakan',
'memberikan', 'sedangkan', 'langsung', 'apakah', 'pihak', 'melalui',
'diri', 'mencapai', 'aku', 'berada', 'tinggi', 'ingin', 'sebelum', 'tengah',
'kini', 'the', 'tahu', 'bersama', 'selasa', 'begitu', 'merasa', 'berbagai',
'mengenai', 'maka', 'katanya', 'ujar', 'kondisi', 'akibat', 'hubungan',
'paling', 'mendapatkan', 'lima', 'meminta', 'melihat', 'sekarang',
'mengaku', 'kerja', 'menyatakan', 'masa', 'sempat', 'adanya', 'hidup',
'datang', 'senin', 'rasa', 'maupun', 'seluruh', 'jenis', 'misalnya',
```

'mendapat', 'bawah', 'meski', 'terlihat', 'akhirnya', 'yakni', 'terakhir',
'kecil', 'jauh', 'tentu', 'tinggal', 'mampu', 'asal', 'sesuai', 'sebesar',
'berat', 'dirinya', 'memberi', 'pagi', 'ternyata', 'mencari', 'sumber',
'menunjukkan', 'biasanya', 'nama', 'sebanyak', 'utara', 'berlangsung',
'kemungkinan', 'yaitu', 'berdasarkan', 'sebenarnya', 'utama', 'pekan',
'terlalu', 'membawa', 'kebutuhan', 'suatu', 'menerima', 'penting',
'tanggal', 'bagaimana', 'terutama', 'awal', 'sedikit', 'nanti', 'pasti',
'muncul', 'dekat', 'lanjut', 'ketiga', 'biasa', 'kesempatan', 'ribu', 'akhir',
'terkait', 'sebab', 'menyebabkan', 'khusus', 'bentuk', 'ditemukan',
'diduga', 'mana', 'nya', 'ya', 'kegiatan', 'sebagian', 'tampil', 'hampir',
'bertemu', 'usai', 'berarti', 'pula', 'justru', 'padahal', 'menyebutkan',
'apalagi', 'program', 'milik', 'teman', 'menjalani', 'keputusan',
'sumber', 'upaya', 'mengetahui', 'mempunyai', 'berjalan',
'menjelaskan', 'mengambil', 'lewat', 'belakang', 'ikut', 'barang',
'kejadian', 'kehidupan', 'keterangan', 'penggunaan', 'masing-masing',
'menghadapi', 'kok',]

```
removed = []
```

```
for t in text:
```

```
    if t not in stopword:
```

```
        removed.append(t)
```

```
text = removed
```

```
text = (" ").join(removed) #Change the tokenized word after removed
```

```
stopwords into sentence
```

```
return text
```

```
def stemmingText(text): # Reducing a word to its word stem that affixes to  

suffixes and prefixes or to the roots of words
```

```
    factory = StemmerFactory()
```

```
    stemmer = factory.create_stemmer()
```

```
    text = ' '.join([stemmer.stem(word) for word in text.split()])
```

```
    return text
```