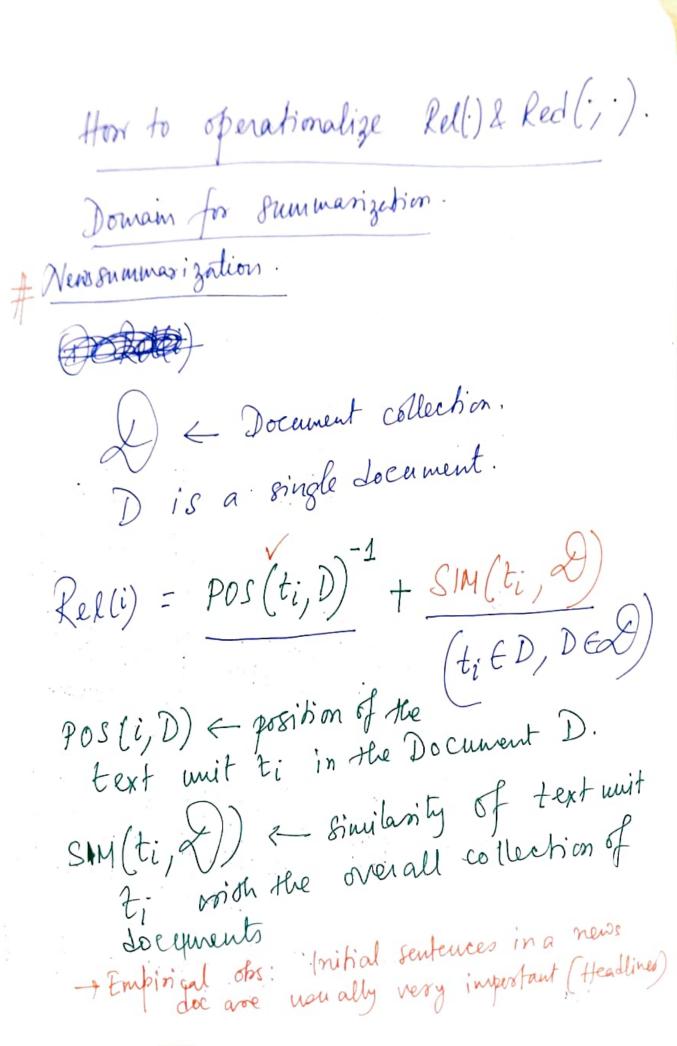
Concept level ILP. X text unit. X sentence level V concept level. The important concepts that a summing should cover. 1) Summary benefits by including a particular concept only once! 2) That means redundancy is implicitly cappused. present indicator variable for the concept i in the tasget summary: ← weight of thi concept i Loucept - word bigamis Neight of no. of occurrences of

Vectorization of SIM ← - tf-idf. Sum up position-wise vectorization of \mathcal{J} to sine (Fi , 1) SIM = cosine (ti, 2).

Redlyj) = SIM (ti,tj). $cosine(t_i, t_j)$ Query focused summarization. -> relevant. Ly given a guery. Q. SM(ti, Q) + SIM(ti, Q). Rel(i) =

Sentence level ILP formulation.
1. him function:
Constraints. (+i,+j) Constraints. (+i,+j) Constraints. (+i,+j)
di, dij E [] . Vanabur not
· Zi L(i) < K T budget or a pair are juded in the jacked in the jacked in the target summary or
dij -di =0 dij -di =0 314) if tiltj are both included then they included be individually
ditaj -dij <1-6) = includes of (5)214.



Oppmization based summarization. Alobal inferencing meshod. Dis a document

to menter textual units

The textual units

D: t1, t2, ..., tn. [textual units] individual Sentences).

Red(i): the relevance of ti to the target summary.

Red(i,i): Redundancy of befreen ti & tj

Red(i,i): Redundancy of ti (in terms of

the no. of mordo).

Inferencing. Problem is to select a subset S of textual units from D such that the oummany score &, i.e., &(S) is maximized. $8(S) = \frac{max}{4} SCD [ties]$ increase the relevance of ti to the target summary S : reduce the

reduce Janey reduce Janey Just among the choice of text

Approximate results → Better Solutions Integer Linear Programming. (ILP). - GNU - ILP solver. Recast the pooblem into a constraint optimization formulation.

Red (i,j) Rel(i) Special areedy Solution. Soot D so that Rel(i) > Rel(i+1) +i - must relevant text unit S= {t1} phile Zies tj=asgmax_{[ti} ED-S) & (S Ustis) return S.

Evaluation of Summaries. (ROUGE) score. (Recall mented Undershidy for Gisting Evaluation) 11 Coverage" Hor much Safety-Oritical System. Medical diagnostics (De CISion support Systems).

Revised ILP. ci & indicator of concept i in the target maximise & wici 8mmmary en = indicator of sentence i in the subject to: Sign (1)

∑ kj Sj ≤ K

Reugth of taget summary. Occij Coccurence of concept i in sentence taget summary (budget) sjoccij & ci + ij . (2) List you select a sentence then it mardate that all concepts in theat jenfence should be selected. ci €{0,1} +i(5) 8j E 80, 13. 4j (8) 25; Occij > ci (3) If a concept is ever selected then it mandales that the sentence containing

ROUGE-1.

ROUGE-1 precision:

3 = 0.6.

Example:

R: the cut is on the

C: The Cat and the

(the, cat, the)

ROUGE-1 recall:

3 = 0:5

ROUGE-2 precision.

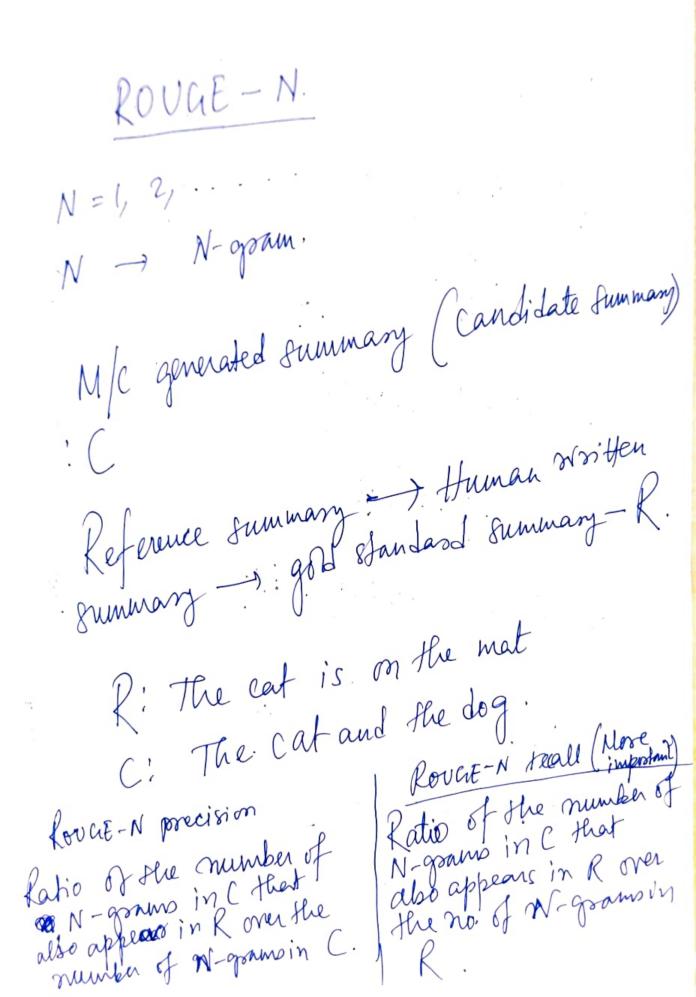
R: Sthe cat, cat is, is on, on the, the maty.

 $\frac{1}{4} = 6.25$

C: S the cat, cat and, and the dog)

ROUGE-2 recall:

 $\frac{1}{5} = 0.2$



L: Longest common subsequence. not necessarily consecutive. longest segrence P: The cat is on the mat be nuggets.

C: the cat is on the mat be nuesels. c: the cat and the dog } ~ muggets. LCS = the cat the. [LCS] = 3. ROUGE-L precision = (3/ Rouge-L recall = 3/1

ROVAE-S.

(Skip-Grams).

R: The cat is on the mat C: The gang cat and the dog.

· Rouge - 2. (Skip = 1).

Lyunigram-shipping).

The cat of match.
The front eat.

ILP summary. Selected some sentences /text uni 6. Ordering. Ners summarization: Chronological ordering. Coherence. -> Choose or derings that make meighboring sentences / textunito Similar (cosine). - Multi entity summary:

Choose orderings that bring similar/sue

Choose orderings that bring summory),

entities closer in the summory).

Linding Topicality. Make the summary topically esherent

ILP Summary. Selected some sentences /text units. Ordening. Ners summarization: Chronological ordering. -> Choose or dering & that make textunits weighboring sentences / textunits Coherence. Similar (cosine). Multi entity summary:

Choose ordernings that bring similar/sue

Choose ordernings that bring similar/sue
entities closer in the summony).

Linding

Their life. Make the summary topically esherent Topicality.

Simplifying sentences. Passe the output summary & Jecide based on some rules which pasts to clip off. Initial adversionals: "On the other fact".
hand", "as a matter fact". PPs <u>mithant</u> named entities: L+ prepositional phrases. E.g. The commercial fishing respictions in Washington roll not be lifted to unless the salmon population increases (to a substantial number (Penned). Affribution clauses:

Fig. Rebels agreed to falles mish govt officials, attribution

Apprositives:
Rajan, 28, an ashist some was Ziving at
the time in Philadelphia, found the
two jirchim in the back of city magazines.
i wapirahim in the back of city magazines.