LDA2Net: Digging under the surface of COVID-19 topics in literature

Topic 19 companion sheet

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This file contains the following supplementary information for Topic 19 of the manuscript "*LDA2Net*: Digging under the surface of COVID-19 topics in scientific literature":

- Human label and automatic n-gram label proposals (Table 1)
- Summary measures (Table 2)
- Network of top 25 bigrams (Figure 1)
- Wordclouds of top 25 words by node relevance measure (Figure 2)
- Wordclouds of top 25 bigrams by edge relevance measure (Figure 3)
- Filtered (0.99 percentile) topic network (Figure 4)

Table 1: Human and automatic label proposals. Automatic label candidate for largest word community of the topic. In parenthesis: absolute frequency of the walk out of a sample of size 1000.

Human label	2-gram label	3-gram label	4-gram label
management of surgical procedures	surgical->procedures (23.7%)	surgical->procedures->patients (15.8%)	surgical->procedures->patients->procedure (2.3%)

Here follows the set of topic-specific measures that have been used to classify the topic and to analyse its structural properties (see manuscript for details):

Table 2: Summary measures

	JSD	Mean propensity	Variance propensity	Modularity	Barrat Clustering Coeff.
	0.573063 24	0.008420	0.000456 86	0.000000	0.572322 55
rank	24	(1	80	31	99

Based on the aforementioned measures, Topic 19 has been classified as a SPECIALIZED topic.

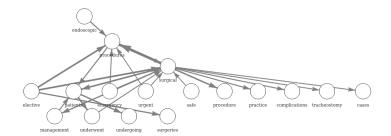


Figure 1: Network of top 25 bigrams (i.e., edges) by weight.



tracheostomy
procedure
orthopaedic
orthopa

anesthesia required tracheostomy sumanagement undergoing elective hospital elective hospital surgical time procedures patients be procedured pandemic underwent procedure risk emergency complications

Out-degree Betweenness PageRank

Figure 2: Top 25 unigrams (i.e., nodes) by measure.



surgicals-management
managementsurgical
patients-procedures
electives-procedures
surgeons-surgicalsurgicals-procedure
patients-procedures patients-surgical
procedures-patients-surgical
procedures-procedures
surgicals-procedures
surgicals-procedures
procedures-surgical
surgical-petients surgical-surgical
surgical-patients surgical-complications
surgical-patient procedures-procedures
procedures-surgical procedures-surgeons
procedures-patients
procedures-patients
complications-surgical

procedures-surgical surgical-techneotomy management-patients englishtechneotomy management-patients englishtechneotomy management-patients englishtechneotomy management-patients urgent-surgical surgical-patients urgent-surgical elective-surgical Surgical-patients urgent-surgical elective-surgical Surgical-patients elective-procedures patients-underwent selective-surgical surgical-management procedures surgical-management procedures surgical-patients-surgical emergency-procedures englishts-surgical e

Figure 3: Top 25 bigrams (i.e., edges) by measure.

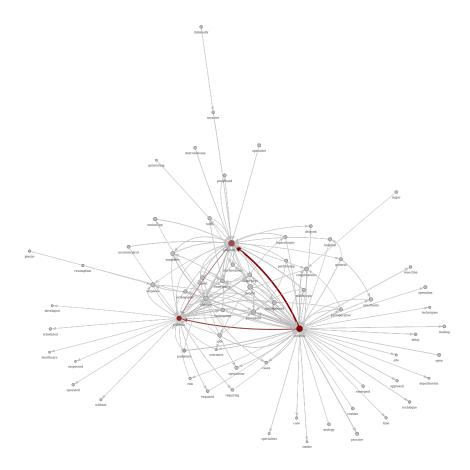


Figure 4: Filtered topic network (by weight). Layout based on Fruchterman-Reingold algorithm. Node size is proportional to topic-specific word probability provided by LDA. Edge width is proportional to topic-specific bigram weight provided by LDA2Net method. Node and edge color represent their betweenness centrality. Isolated nodes have been removed after filtration.