Segment Characterisation Algorithm

Input: L

SegmentId	Segment Start Time	Segment End Time	Segment Transcript
mWo-G3UQ-zU1	0	0.19	My **dad** was always the rock of the **family**. So seeing him struggle to breathe, it was really heart-breaking. My dad was always so strong and independent. He fished with us, played tennis with us. He was always very active. A few years ago, we started to notice a change in my **dad**.
mWo-G3UQ-zU2	0.23	0.42	He started to have less **energy**. He would lose his breath a little more easily. He was on the couch. He had the oxygen mask. He wasn't able to do those things. It really was a shock to us. My **dad** was going downhill very quickly, and we knew something had to be done. He was in and out of local hospitals a couple of times.
mWo-G3UQ-zU3	0.45	1	Nobody was really able to accurately diagnose him. I think that was probably the scariest thing it was. We didn't know what was going to happen. Was he going to be OK? Was he going to make it? We knew we needed a place that had more experience. So they recommended the Temple Lung Center.

Input: L= List of Video Segments, length(LVS)= 7

i	id	start(s)	end(e)	transcript(t)	FT^1	FC^1	FT^2	FT
0	''	0	0	[]	[]	[]	[]	[]

i < length(LVS)

| 0 | mWo-G3UQ-zU1 | 0 | 0.19 | [My dad was always the rock of the family. So seeing him struggle to breathe, it was really heart-breaking. My dad was always so strong and independent. He fished with us, played tennis with us. He was always very active. A few years ago, we started to notice a change in my dad.] | ['SocialRelationship'] | ['family','dad'] | ['SocialRelationship'] | ['SocialRelationship'] |

SemanticTaggingOutput / *Topic ClassifierOutput* / *FT* / **Output: LCh**

Output: LCh
[mWo-G3UQ-zU1, 0.00, 0.19, [My dad was always the rock of the family. So seeing him struggle to breathe, it was really heart-breaking. My dad was always so strong and independent. He fished with us, played tennis with us. He was always very active. A few years ago, we started to notice a change in my dad.], ['SocialRelationship'], ['family','dad']]

| 1 | mWo-G3UQ-zU2 | 0.23 | 0.42 | [He started to have less energy. He would lose his breath a little more easily. He was on the couch. He had the oxygen mask. He wasn't able to do those things. It really was a shock to us. My dad was going downhill very quickly, and we knew something had to be done. He was in and out of local hospitals a couple of times.] | ['Physical Health', 'Social Relationship'] | ['Energy','dad'] | ['SocialRelationship'] | ['SocialRelationship'] |

Output: LCh
[mWo-G3UQ-zU1, 0.00, 0.19, [My dad was always the rock of the family. So seeing him struggle to breathe, it was really heart-breaking. My dad was always so strong and independent. He fished with us, played tennis with us. He was always very active. A few years ago, we started to notice a change in my dad.], ['SocialRelationship'], ['family','dad'] , [[mWo-G3UQ-zU2, 0:23, 0:42, [He started to have less energy. He would lose his breath a little more easily. He was on the couch. He had the oxygen mask. He wasn't able to do those things. It really was a shock to us. My dad was going downhill very quickly, and we knew something had to be done. He was in and out of local hospitals a couple of times.], ['SocialRelationship'], ['dad']]]

| 2 | mWo-G3UQ-zU3 | 0.45 | 1 | [Nobody was really able to accurately diagnose him. I think that was probably the scariest thing is not knowing what it was. We didn't know what was going to happen. Was he going to be OK? Was he going to make it? We knew we needed a place that had more experience. So they recommended the Temple Lung Center.] | ['PersonalValuesAndBeliefs'] | ['Temple'] | [] | [] |

Output: LCh
[mWo-G3UQ-zU1, 0.00, 0.19, [My dad was always the rock of the family. So seeing him struggle to breathe, it was really heart-breaking. My dad was always so strong and independent. He fished with us, played tennis with us. He was always very active. A few years ago, we started to notice a change in my dad.], ['SocialRelationship'], ['family','dad'] , [[mWo-G3UQ-zU2, 0:23, 0:42, [He started to have less energy. He would lose his breath a little more easily. He was on the couch. He had the oxygen mask. He wasn't able to do those things. It really was a shock to us. My dad was going downhill very quickly, and we knew something had to be done. He was in and out of local hospitals a couple of times.], ['SocialRelationship'], ['dad']], [mWo-G3UQ-zU3, 0.45, 1.00, [Nobody was really able to accurately diagnose him. I think that was probably the scariest thing is not knowing what it was. We didn't know what was going to happen. Was he going to be OK? Was he going to make it? We knew we needed a place that had more experience. So they recommended the Temple Lung Center.], [], []]]

| 3 | | | | | | | | |

i < length(LVS)

Data: List of video segments L which is the output of Algorithm 1 and domain taxonomy topics $= \{T_1, ..., T_n\}$ where each T_i is a set of concepts (classes or individuals).

Result: List of Characterised Video segments LCh.

1 /* LCh is a list of lists where each list includes: a segment information [segmentId, start time, end time, transcript], a list of Focus Topics FT and a list of Focus Concepts FC */

2 $i = 0$; $FT = []$; $LCh = []$; $SemanticTaggingOutput = []$; $TopicClassifierOutput = []$;

3 /* Loop through all video segments. Each segment will have two characterisations, one from the Semantic Tagging and the other one from the Topic Classifier characterisation which are parts of the the Segment Characterisation steps of VISC-L */

4 **while** $i < length(L)$ **do**

5    $SemanticTaggingOutput = [L[i], FT^1[i], FC^1[i]]$ /* Implement the Semantic Tagging step of VISC-L to get the **first** characterisation of a video segment-list of Focus Topics (FT^1) and Focus Concepts (FC^1) */

6    $TopicClassifierOutput = [L[i], FT^2[i]]$ /* Implement the Topic classifier step of VISC-L to get the **second** characterisation-list of Focus Topics (FT^2) */

7    $FT[i] = intersection(FT^1[i], FT^2[i])$ /*FT is the list of the same Focus Topic(s) assigned to the segment after implementing the Semantic Tagging and the Topic Classifier steps of VISC-L */

8   **if** $FT[i] \neq []$ **then**

9      $LCh.append([L[i], FT[i], FC[i]])$ /* The Focus Concepts FC are extracted from the Semantic Tagging output (first segment characterisation) which are belong to the Focus Topic $FT[i]$ */

10   **else**

11     $LCh.append([L[i], [], []])$ /* No Focus Topics and Focus Concepts are assigned to the segment when there is no matching between the Focus Topics assigned to the segments after implementing the Semantic Tagging and the Topic Classifier steps of VISC-L */

12   $i = i + 1$;

13 **Return** LCh

Row 1

mWo-G3UQ-zU4 1.03 1.28

And that was the best decision we ever made. Immediately you could feel a difference at **Temple**. From the doctors to the testing that was done there. We just knew he was in the right place. He was going to get the best care he could. So I think at **Temple** Lung Center they just tend to see more cases like his.

3 mWo-G3UQ-zU4 1.03 1.28

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['PersonalValuesAndBelie fs']   ['Temple']

['PersonalValuesAndBelie fs', 'PhysicalHealth']   ['PersonalValuesAndBelie fs']

[mWo-G3UQ-zU1, 0.00, 0.19, [My dad was always the rock of the family. So seeing him struggle to breathe, it was really heart-breaking. My dad was always so strong and independent. He fished with us, played tennis with us. He was always very active. A few years ago, we started to notice a change in my dad.], ['SocialRelationship'], ['family','dad'], [[mWo-G3UQ-zU2, 0:23, 0:42, [He started to have less energy. He would lose his breath a little more easily. He was on the couch. He had the oxygen mask. He wasn't able to do those things. It really was a shock to us. My dad was going downhill very quickly, and we knew something had to be done. He was in and out of local hospitals a couple of times.], ['SocialRelationship'], ['dad']], [mWo-G3UQ-zU3, 0.45, 1.00, [Nobody was really able to accurately diagnose him. I think that was probably the scariest thing is not knowing what it was. We didn't know what was going to happen. Was going to be OK? Was he going to make it? We knew we needed a place that had more experience. So they recommended the Temple Lung Center.], [], []], [mWo-G3UQ-zU4, 1.03, 1.28, [And that

```
   while i < length(L) do
 5   SemanticTaggingOutput=[L[i], FT¹[i], FC¹[i]] /* Implement the
       Semantic Tagging step of VISC-L to get the first characterisation of
       a video segment-list of Focus Topics (FT¹) and Focus Concepts
       (FC¹) */
 6   TopicClassifierOutput=[L[i], FT²[i]] /* Implement the Topic classifier
       step of VISC-L to get the second characterisation-list of Focus
       Topics (FT²) */
 7   FT[i] = intersection( FT¹[i], FT²[i]) /* FT is the list of the same
       Focus Topic(s) assigned to the segment after implementing the
       Semantic Tagging and the Topic Classifier steps of VISC-L */
 8   if FT[i] ≠ [] then
 9     LCh.append([L[i], FT[i], FC[i]]) /* The Focus Concepts FC are
         extracted from the Semantic Tagging output (first segment
         characterisation) which are belong to the Focus Topic FT[i] */
10   else
11     LCh.append([L[i], [], []]) /* No Focus Topics and Focus Concepts
         are assigned to the segment when there is no matching between the
         Focus Topics assigned to the segments after implementing the
         Semantic Tagging and the Topic Classifier steps of VISC-L */
12   i = i + 1;
13 Return LCh
```

Row 2

mWo-G3UQ-zU5 1.33 1.53

Things that are a little bit more rare. So they seem to have more knowledge. Just right off the bat they seemed to have a better understanding of what was going on with him. They really came up with a plan for him, how they could make him better, how they could treat him, and I felt like they found the right mix for him. You know, it was a combination of medicine, pulmonary therapy, oxygen.

4 mWo-G3UQ-zU5 1.33 1.53

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[]   []

[Physical Health]   []

i < length(LVS)

[mWo-G3UQ-zU1, 0.00, 0.19, [My dad was always the rock of the family. So seeing him struggle to breathe, it was really heart-breaking. My dad was always so strong and independent. He fished with us, played tennis with us. He was always very active. A few years ago, we started to notice a change in my dad.], ['SocialRelationship'], ['family','dad'], [[mWo-G3UQ-zU2, 0:23, 0:42, [He started to have less energy. He would lose his breath a little more easily. He was on the couch. He had the oxygen mask. He wasn't able to do those things. It really was a shock to us. My dad was going downhill very quickly, and we knew something had to be done. He was in and out of local hospitals a couple of times.], ['SocialRelationship'], ['dad']], [mWo-G3UQ-zU3, 0.45, 1.00, [Nobody was really able to accurately diagnose him. I think that was probably the scariest thing is not knowing what it was. We didn't know what was going to happen. Was going to be OK? Was he going to make it? We knew we needed a place that had more experience. So they recommended the Temple Lung Center.], [], []], [mWo-G3UQ-zU4, 1.03, 1.28, [And that

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 8   if FT[i] ≠ [] then
 9     LCh.append([L[i], FT[i], FC[i]]) /* The Focus Concepts FC are
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10   else
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         Semantic Tagging and the Topic Classifier steps of VISC-L */
12   i = i + 1;
13 Return LCh
```

Row 3

mWo-G3UQ-zU6 1.58 2.22

And they really knew what would get him back to where he was. I love watching my kids with Grandpa and seeing them play with him and interact with him. And now knowing that he'll be around to see all those special moments that are still to come in their life is just amazing. I'm grateful to **Temple** because without **Temple** I don't think my **dad** would be where he is today.

5 mWo-G3UQ-zU6 1.58 2.22

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['PersonalValuesAndBelie fs', 'SocialRelationship']   ['Temple','dad']

['PersonalValuesAndBelie fs', 'SocialRelationship']   ['PersonalValuesAndBelie fs', 'SocialRelationship']

i < length(LVS)

[mWo-G3UQ-zU1, 0.00, 0.19, [My dad was always the rock of the family. So seeing him struggle to breathe, it was really heart-breaking. My dad was always so strong and independent. He fished with us, played tennis with us. He was always very active. A few years ago, we started to notice a change in my dad.], ['SocialRelationship'], ['family','dad'] , [[mWo-G3UQ-zU2, 0:23, 0:42, [He started to have less energy. He would lose his breath a little more easily. He was on the couch. He had the oxygen mask. He wasn't able to do those things. It really was a shock to us. My dad was going downhill very quickly, and we knew something had to be done. He was in and out of local hospitals a couple of times.], ['SocialRelationship'], ['dad']], [mWo-G3UQ-zU3, 0.45, 1.00, [Nobody was really able to accurately diagnose him. I think that was probably the scariest thing is not knowing what it was. We didn't know what was going to happen. Was he going to be OK? Was he going to make it? We knew we needed a place that had more experience. So they recommended the Temple Lung Center.], [], []], [mWo-G3UQ-zU4, 1.03, 1.28, [And that

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12   i = i + 1;
13 Return LCh
```

6

i < length(LVS)

```
14  while i < length(L) do
```

mWo-G3UQ-zU7   2.25   2.31

They gave him his life back. We got our **dad** back. The grandkids got Grandpa back. They didn't just give us **hope**. They gave us him, which is great.

6

mWo-G3UQ7   2.25   2.31

[They gave him his life back. We got our **dad** back. The grandkids got Grandpa back. They didn't just give us **hope**. They gave us him, which is great.]   ['SocialRelationship', 'PsychologicalHealth']   ['dad', 'hope']   ['SocialRelationship', 'PsychologicalHealth']   ['SocialRelationship', 'PsychologicalHealth']

[mWo-G3UQ-zU1, 0.00, 0.19, [My dad was always the rock of the family. So seeing him struggle to breathe, it was really heart-breaking. My dad was always so strong and independent. He fished with us, played tennis with us. He was always very active. A few years ago, we started to notice a change in my dad.], ['SocialRelationship'], ['family','dad'] , [[mWo-G3UQ-zU2, 0:23, 0:42, [He started to have less energy. He would lose his breath a little more easily. He was on the couch. He had the oxygen mask. He wasn't able to do those things. It really was a shock to us. My dad was going downhill very quickly, and we knew something had to be done. He was in and out of local hospitals a couple of times.], ['SocialRelationship'], ['dad']], [mWo-G3UQ-zU3, 0.45, 1.00, [Nobody was really able to accurately diagnose him. I think that was probably the scariest thing is not knowing what it was. We didn't know what was going to happen. Was he going to be OK? Was he going to make it? We knew we needed a place that had more experience. So they recommended the Temple Lung Center.], [], []], [mWo-G3UQ-zU4, 1.03, 1.28, [And that

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12 $i = i + 1$;
13 **Return** *LCh*

7

i=7 and NOT < 7 length(LVS)

4 **while** $i < length(L)$ **do**
5 *SemanticTaggingOutput*=[L[i], $FT^1[i]$, $FC^1[i]$] /* Implement the Semantic Tagging step of VISC-L to get the **first** characterisation of a video segment–list of Focus Topics (FT^1) and Focus Concepts (FC^1) */
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