Supplementary Material for Caption This! Best practices for live captioning of jargon-rich scientific presentations

Michele L. Cooke[1], Celia R. Child[2], Elizabeth C. Sibert[3], Christoph von Hagke[4] and S. G. Zihms[5]

We used two passages that to test the AI-based live auto captioning

Passage 1:

"Since the Alpine nappes exclusively consist of thin slices of upper crustal basement and/or its cover, detached from their lower crustal and mantle substratum, all European lower crust, including parts of the upper crust, must have been subducted together with the mantle lithosphere. Hence, north vergent nappe stacking during this collisional stage took place within an accretionary wedge that starts to grow as more nonsubductable upper crustal granitic material of the European margin enters the subduction zone. Radiogenic heat production within this granitic basement, perhaps in combination with slab break-off, leads to a change in the thermal regime and to Barrovian type metamorphism." (taken from 8)

Passage 2:

"Paleomagnetic and structural analyses of the Western European Variscan Belt (WEVB) suggest that the most viable kinematic model for Variscan deformation in northern Iberia is oroclinal bending of an originally linear belt in a two-stage tectonic history. This history represents two regional compression phases (East West in the Late Carboniferous and North South in the Permian, both in present day coordinates), which resulted in the refolding (about steeply plunging axes) of initially north south trending thrusts and folds in the hinge zone, and oroclinal tightening due to vertical axis rotation of the belt's limbs. However, the orocline model has yet to be critically tested in the WEVB's core. This study reports new paleomagnetic, rock magnetic, and structural data from the inner core of the WEVB in order to test opposing kinematic models for the well documented fault and fold interference structures formed by late stage Variscan deformation and to better understand the overall development of the WEVB arc."(taken from 9)

The Supplementary Tables S1-S9 list the data from each of the tests of Microsoft Powerpoint and Google Slides

1

Table S1.

Word error rate for passage 1 about the Alpine Nappes. Total word count is 104

Trial	# of words wrong	WER (%)	Notes
ORIGINAL	0 / 104	100	
PPT 1	10	9.6%	I'm counting when it leaves out "and" from "basement and/or"
PPT 2	7	6.7%	
PPT 3	7	6.7%	
PPT 4	9	8.6%	
PPT 5	8	7.7%	Spelled Barrovian correctly
PPT 6	7	6.7%	
PPT 7	7	6.7%	By now, the errors are consistent: naps, "crustal and mantle", nonsubductable, granitic, Barrovian
PPT 8	11	10.6%	"subjected" "slide"
PPT 9	6	5.8%	
PPT 10	7	6.7%	
Google 1	10	9.6%	nappes, crustal, subducted, "vergent nappe stacking", accretionary, nonsubductable, Barrovian
Google 2	11	10.6%	"sloughed" breakoff, "upper crustal granitic material"
Google 3	16	15.4%	chunk: "granitic material of the European margin"
Google 4	13	12.5%	
Google 5	10	9.6%	

Table S2.

Word error rate for passage 1 about the WEVB Arc. Total word count is 159

Trial	# of words wrong	WER (%)	Notes
ORIGINAL	0 / 159	100	WEVB = 1 word
PPT 4	15	9.4%	
PPT 5	15	9.4%	
PPT 6	12	7.5%	
PPT 7	12	7.5%	
PPT 8	15	9.4%	
PPT 9	14	8.8%	
PPT 10	13	8.2%	
PPT 11	14	8.8%	
PPT 12	14	8.8%	
PPT 13	12	7.5%	
Google 1	25	15.7%	left out a CHUNK
Google 2	14	8.8%	
Google 3	20	12.6%	left out a CHUNK
Google 4	10	6.3%	the only words it got wrong were Variscan, WEVB, and orocline
Google 5	12	7.8%	same as 4, but it missed "present day"

Table S3.

Word error rate for chines accented english

Trial	# of words wrong	WER (%)	Notes
Alps 1 (ppt)	20 / 104	19.2%	
Alps 2 (ppt)	18	17.3%	
Alps 3 (ppt)	23	22.1%	
Alps 4 (ppt)	20	19.2%	
WEVB 1 (ppt)	32	20.1%	
WEVB 2 (ppt)	31	19.5%	
WEVB 3 (ppt)	30	18.9%	
WEVB 4 (ppt)	34	21.4%	
Alps 5 (google)	18	17.3%	
Alps 6 (google)	22	21.1%	
Alps 7 (google)	25	24%	left out a chunk after "slab break off"
Alps 8 (google)	19	18.3%	
WEVB 5 (google)	28	17.6%	
WEVB 6 (google)	32	20.13%	
WEVB 7 (google)	25	15.7%	
WEVB 8 (google)	27	16.98	

*Consistent trouble words: Nappes, Upper crustal, "and/or its cover", mantle, vergent, "nonsubductable upper crustal, radiogenic, regime, Barrovian.
Paleomagnetic, belt, viable, Variscan (it did get this sometimes), deformation, Iberia, oroclinal (or any variation), phases: East, axes, thrusts and folds, hinge zone, "belt's limbs", WEVB, kinematic, arc.
Sometimes: "steeply plunging".

Table S4.

Word error rate for Mexican accented English

Trial	# of words wrong	WER (%)	Notes
Alps 1 (ppt)	16 / 104	15.4%	Nappes, thin, detached, crustal, mantle, substratum, lithosphere, accretionary, unsubductable, subduction zone, radiogenic, Barrovian
Alps 2 (ppt)	16	15.4%	Same ^
Alps 3 (ppt)	16	15.4%	• kinematic, vergent
WEVB 1 (ppt)	32 / 159	20.1%	Paleomagnetic, Variscan, WEVB, oroclinal, belt, phases, Permian, "in present day coordinates", axes, trending, zone, limbs, "late stage variscan deformation"
WEVB 2 (ppt)	30	18.9%	
WEVB 3 (ppt)	31	19.5	
Alps 4 (google)	29	27.9%	Nappes, thin, crustal, substratum, mantle lithosphere, vergent, collisiojal, accretionary wedge, *nonsubductable upper crustal granitic material of the European margin enters the subduction zone*, Radiogenic, slab, leads to, Barrovian
Alps 5 (google)	17	11.3%	
Alps 6 (google)	19	11.9%	
WEVB 4 (google)	36	22.6%	
WEVB 5 (google)	30	18.8%	
WEVB 6 (google)	32	20.13%	Paleomagnetic, Variscan, WEVB, oroclinal, belt, tectonic, phases, Permian, axes, hinge zone, limbs, interference. Lots of phrases

Table S5.

Word error rate for Spanish accented English

Trial	# of words wrong	WER (%)	Notes
Alps 1 (PPT)	26 / 104	25%	
Alps 2 (PPT)	29	27.9%	
Alps 3 (PPT)	23	22.1%	
WEVB 1 (PPT)	41 / 159	25.8%	
WEVB 2 (PPT)	49	30.8%	
WEVB 3 (PPT)	44	27.7%	
Alps 4 (google)	31	29.8%	
Alps 5 (google)	32	30.7%	
Alps 6 (google)	40	38.5%	
WEVB 4 (google)	38	23.9%	
WEVB 5 (google)	34	21.4%	
WEVB 6 (google)	33	20.7%	

Table S6.

WER with German accented English

Trial	# of words wrong	WER (%)	Notes
Alps ppt 1	10 / 104	9.6	
Alps ppt 2	10	9.6	
Alps ppt 3	10	9.6	
WEVB ppt 1	23 / 159	14.5	
WEVB ppt 2	19	11.9	
WEVB ppt 3	18	11.3	
Alps google 1	21 / 104	20.2	
Alps google 2	19	18.3	
Alps google 3	21	20.2	
WEVB google 1	33 / 159	20.7	chunk
WEVB google 2	41	25.8	2 chunks
WEB google 3	34	21.4	

Table S7.

Spanish speech to English captions on PPT

Trial	# of words wrong	WER (%)	Notes
Alps 1	8/120	6.6%	Nappes, substratum, subducted, "north vergent nappe", accretionary, slab, Barrovian
Alps 2	8	6.6%	
Alps 3	9	7.5%	

Table S8.

Word error rate with background noise

Trial	# of words wrong	WER (%)	Notes
Alps 1 (PPT)	14 / 104	13.5%	
Alps 2 (PPT)	21	20.2%	
Alps 3 (PPT)	43	41.3%	chunks
WEVB 1 (PPT)	23 / 159	14.5%	
WEVB 2 (PPT)	19	11.9%	
WEVB 3 (PPT)	21	13.2%	
Alps 4 (google)	16	15.4%	
Alps 5 (google)	20	19.2%	
Alps 6 (google)	30	28.8%	
WEVB 4 (google)	22	13.8%	
WEVB 5 (google)	38	23.9%	left out a chunk
WEVB 6 (google)	32	20.1%	

Table S9.

Word error rate with using lapel microphone and speaking clearly

Trial	# of words wrong	WER (%)	Notes
WEVB ppt 1	7 / 159	4.4	
WEVB ppt 2	6	3.77	
WEVB ppt 3	7	4.4	
WEVB ppt 4	7	4.4	
WEVB ppt 5	6	3.77	
Alps ppt 1	5 / 104	4.8	
Alps ppt 2	7	6.7	
Alps ppt 3	5	4.8	
Alps google 1	7	6.7	
Alps google 2	8	7.7	
Alps google 3	12	11.5	chunk
WEVB google 1	9 / 159	5.66	only errors are wevb, orocline, variscan
WEVB google 2	11	6.9	
WEVB google 3	9	5.66	

Table S10.

Word error rate using recording at the end of the experiment

Trial	# of words wrong	WER (%)	Notes
Alps ppt 1	5 / 104	4.8	
Alps ppt 2	6	5.7	
Alps ppt 3	6	5.7	
WEVB ppt 1	11 /159	6.9	
WEVB ppt 2	14	8.8	lots of non-jargon errors. but it consistently got the first chunk of the first sentence every time = learning, just needs microphone to be the best it can be (Crisp)
WEVB ppt 3	10	6.3	
Alps google 1	10 / 104	9.6	
Alps google 2	18	17.3	chunk
Alps google 3	17	16.3	chunk
WEVB google 1	16 / 159	10.1	small chunk
WEVB google 2	10	6.3	
WEVB google 3	17	10.7	small chunk