Augmenting Machine Translation of Sports Commentary to Support Global Fans

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ABSTRACT

Machine Translation (MT) has seen significant advancements in terms of accuracy and availability in recent years. Yet, MT of real-time speech can be error prone due to missing broader context. We explore augmenting MT output in the domain of sports commentary. Given the pace of translation subtitles in sports matches, and shortcomings of MT, global fans face language barriers in understanding the sports commentary. Our early findings show that fans appreciated a keyword highlighting and extractions techniques that afford concise content presentation in subtitles and focus on the sports competition.

Keywords: Machine translation, fandom, speech bubbles

Index Terms: Human-centred computing → Collaborative and social computing

1 INTRODUCTION

Global fans of professional sports often wish to watch sports competitions (live or recorded) from other countries, for instance, the World Cup of football (soccer). Often competitions are not broadcast locally in a fan's native language, forcing them to find a broadcast in another language. Some fans may also prefer listening to local commentators due to their greater knowledge or enthusiasm about their home athlete or team. Both situations introduce language barriers to understanding sports commentary.

Recent proliferation of machine translation (MT) has reduced language barriers for global fans. Indeed, the *Google Translate* MT tool was touted as an "unlikely hero" for global fans attending the 2018 FIFA World Cup in Russia [1]. Yet, MT models can be inaccurate in scenarios where broader context is missing, such as with real-time audio [4]. Moreover, MT models are better trained in some languages (e.g., English) that others (e.g., Czech) [2] thus, global fans are not equally supported.

Human-computer interaction researchers have proposed augmenting MT output to improve content understanding. For example, annotating translations with para-linguistic cues such as emojis and pictures can convey social intentions and emotion [5]. Augmenting MT by highlighting keywords can increase content understanding and improve multi-lingual collaboration [3]. Using keyword highlighting together with emotional analysis to augment MT of social media posts can increase content understanding and users' willingness to engage with posts [5].

To our knowledge, no one has explored augmenting MT output in a sports context. To address this gap, we are investigating MT keyword highlighting in sports commentary. Augmenting MT with emotion (via emojis, pictures, or emotional analysis) is not currently included in our because, unlike prior work that focused on text-only scenarios, we felt the availability of the commentator's audio feed would provide emotional context. Here, we describe our preliminary design concepts, informal user feedback we have gathered thus far, and our planned next steps.

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2 DESIGN CONCEPTS

Preliminary consultations with global fans of Spanish football, highlighted the high cognitive demand of following both the gameplay and commentary subtitles. Fans also emphasized that the commentary was supplemental to the primary goal of watching the football action. Thus, our design goals were 1) to reduce the cognitive effort involved in content understanding and 2) to minimize time needed to view the MT output.

To address these goals, three design alternatives were mocked-up based on autogenerated subtitles in YouTube[1] of a Spanish football match (Figure 1). One design used keyword highlighting to increase the salience of important content. Another design aimed to improve the interpretability of the MT output by refining YouTube's MT output using more advanced AI (ChatGPT[2]). Our final design aimed to be more visually efficient by showing only selected keywords from the refined MT output.

3 INFORMAL USER FEEDBACK

Informal feedback was gathered on our three designs from several foreign football fans. The keyword highlighting applied to the autogenerated subtitles was not well received because of the poor MT output, which contained grammatical errors and was misleading to some fans despite the availability of gameplay visuals. The refined MT output was preferred, but it tended to make subtitles longer; thus, not meeting design goal 2. Thus, some fans commented they would prefer the selected keywords design for watching a whole match because it was more efficient to read. However, one fan commented that only seeing the selected keywords might be boring for a whole match.

4 NEXT STEPS

The above feedback suggests that no design alternative fully met our design goals or fans' preferences. Exploring keyword highlighting of refined MT output and longer-term experience with selected keywords may be fruitful. Also, further research is warranted on identifying what commentary fans find most helpful.

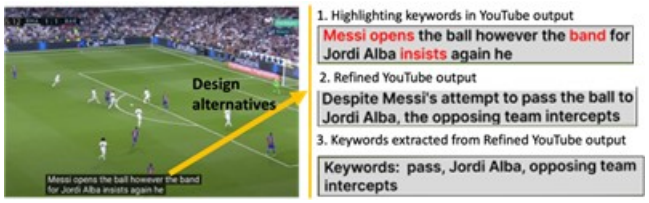

Figure 1: Left: Live match playing on YouTube with translation subtitles. Right: Three design alternative for showing the subtitles.

[1] https://www.youtube.com
[2] https://chat.openai.com

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