

RISQ: RECOGNISING SMOKING GESTURES WITH INERTIAL SENSORS ON A WRISTBAND

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Contribution

This paper presents *RisQ*, a wearable device to detect smoking gestures and sessions in real time. Using self defined necessities in smoking detection technology, it expands upon other attempts that may fall short, resulting in a simple, reliable and easy to wear device, that boasts an strong level of accuracy.

Review

The authors of this paper have presented a detailed review of previous work in this area, while retaining their originality. The authors highlight the limitations of previous designs, explaining them in relation to their argued necessities; reliability, simplicity comfortability. Arguments for these constraints are fair and concise, clearly showing the reasons why *RisQ* is a good advancement. It would be good see some motivation for the components used for *RisQ*, as there are no explicitly positive comments on the items used by the reviewed work.

This is also a worthy investigation. The CDC highlight that cigarette smoking causes more than 480,000 deaths a year [1], an increased figure from that mentioned in the paper, and that it is the leading cause of preventable death in the US. It has been shown, as mentioned by the authors, that intervening at the right times can help a person quit smoking, and *RisQ* looks to identify these particular moments.

The organisation and presentation of the undertaken work is extremely well done. Each section is detailed to an appropriate level, allowing a comprehensive understanding by the reader. There could be a case for them not having enough data to have a validated result; only twenty eight hours of data were recorded from fifteen volunteers. Despite this, other researchers can pick up the techniques and methods with relative ease, due to the in depth and extensive explanations.

One particularly well written part of this report is the explanation of how data is extracted. The authors display clear and concise equations regarding the use of quaternions, followed by easy to follow figures. These give the reader an excellent insight into the workings of *RisQ*.

One note of concern is the lack of adaptability displayed by the authors. Despite a good amount of success in the results, areas of failure are very quickly overlooked, and even passed off as a unavoidable fault. It would be good, perhaps, to see a further work section for the report. This could be used to elaborate on the couple of lines they give to talk about the extensions of their design, and maybe how they plan to try and cover off the areas of vulnerability. These improvements could perhaps help improve on the reliability, despite it already being impressively high.

References

- [1] CDC “*Tobacco Related Mortality*”, [Online] Available at: https://www.cdc.gov/tobacco/data_statistics/fact_sheets/health_effects/tobacco_related_mortality/index.htm