



Technology to Licence T-21-009

Opti-Text:

Print and digital device text optimisation technology for myopia prevention.



Overview

Researchers at TU Dublin have developed a Natural image based spatial frequency optimisation system to reduce risk of myopia through physical and digital text enhancement.

The natural outdoors environment has a very characteristic spatial frequency spectrum and appears to be protective against myopia development. The spatial frequency content of reading material or text from a book or device (phone, tablet, computer etc.) is very different to that experienced in nature, which may explain the excessive eye growth and consequential myopia development that are associated with near work.

The essence of this invention is a method to alter the spatial frequency information in text to create a spatial frequency profile that closely resembles the natural outdoor environment, while at the same time preserving the spatial detail required to retain the informational content of the text.

In developed countries, reading and education are well-recognised risk factors for myopia development and myopia is rare in indigenous populations with low levels of literacy. Recently a causal relationship has been demonstrated between years in education with increasing myopia using the technique of Mendelian Randomisation. This link between book work and myopia is complex and poorly understood, but a question that has received little attention is whether it is near work per se, or the spatial properties of the written word that leads to myopia. In addition, the geographical variations in myopia prevalence are well recognised, with myopia levels far higher in Asian children.

Spatial frequency content of the retinal image is known to be a highly relevant factor in experimental myopia, and recently been proposed to be a factor in human myopia.





Advantages

The technology provides a means to optimise the spatial frequency properties of various alphabets and scripts in common use to match the spatial frequency spectrum of the natural world. This technology could be developed and applied to books, devices and other written materials developed for children and young adults in various languages, alphabets and scripts.

Opportunity

The essence of this invention is a method to alter the spatial frequency information in text to create a spatial frequency profile that closely resembles the natural outdoor environment, while at the same time preserving the spatial detail required to retain the informational content of the text.

As well as physical media, these transformations can be applied to digital screens (eg. e-books, tablets, phones and computers), creating a large and future-proof market opportunity.

Stage of Development

TU Dublin is seeking commercial partners to assist in bringing this technology to market.



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Knowledge Transfer Office
TU Dublin Hothouse
Greenway Hub
TU Dublin
Grangegorman Lower
Dublin 7
D07 H6K8

www.tudublin.ie/hothouse
hothouse@tudublin.ie
+353 1 2205414