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Application of fuzzy logic in dyslexia user modelling to design customizing assistive technology

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Abstract: Cognitive psychology studies phenomena that cannot be directly observed. Scientific knowledge about the brain is extensive, but there is still a lot to be understood about its functions. Cognitive functions are weakened in dyslexic children; this is reflected in highly individual problems regarding the reading skills. Reading is a process which consists of decrypting graphic characters (perceptual level) and understanding the meaning of words (cognitive level). These levels cannot be separated. An approach – fuzzy logic – is used in order to address this issue and create a model of the dyslexic user, based on which technologies can be individually tailored to a particular dyslexic. We discusse the possibilities of the use of the mathematical apparatus for the categorisation of users with regard to their "black box". Further, we focuse on the development of new assistive technologies targeted at specific attention disorders, reading disorders, as well as information processing disorders.