

# **Real-Time Fractals Rendering in Responsive Websites**

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## **ABSTRACT**

Considering that websites today should be attractive to retain the user's attention, one of the elements that undoubtedly contribute to retaining the user's attention is the use of fractals as an automatic design. Fractals are a relatively new field and are based on the repetition of specific patterns, which link computer graphics and geometric modeling. The most important parameters of fractals processing are responsive web usability and processing speed. In this paper, experiments were done with fractals which bases are typographic elements or letter signs from several different fonts. Programming procedures are made in the PostScript programming language that uses modeling methods of self-combination pseudo-random numbers, and random numbers of nonlinear transformation. The study is based on the use of fractals usage on the web and examines usability. The usability was tested on two different screen sizes: small device (mobile phone) with a maximum screen width of 765 px, and large device (desktop) with a maximum screen width of 992 px. The fractal usability was an evaluation criterion regarding visibility, recognizability, and clarity. Using a non-parametric Wilcoxon Matched Pairs test has been proven that the clarity of the desired communicated message on small devices for all three samples is extremely low, and it is not recommended as a design element that would be used to personalize web content.

**Keywords:** automatic design; content personalization; PostScript programming; screen size; typography