Activation function as an inspiration for metamaterial design and gyroid as inspiration for activation function design.

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Oscillations accompany us throughout our lives. From the rocking in the cradle, through commuting between living space to working one, and, finally, dived to time flowing - from morning to evening and again to (following) morning, which, maybe, is perceived more sensitively in time period of higher age or lower physical-psychical condition. Life is interwoven with interactions with an infinite variety of materials. The state-of-the-art materials and technologies offer plenty of possibilities and challenges to improve human life. This paper presents an illustration of specifically one oscillation: a) from the design of planar sections of the gyroid structure to the activation function (AF), and vice versa b) from the AF to the design of a specific metamaterial structures. In recent years AF as an necessity element in artificial intelligence algorithms of deep neural nets is also exploated in specific material properties identifications. Here we contribute next AF mission. Mainly based on linear transformations we engage AF sigmoid as the generator of metamaterials structures. Consequently, the candidate for AF was introduced from the features of intersection curves in gyroid. Testing these properties is an opportunity for further research and expanding new knowledge in the field of artificial intelligence.

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