Hashtone: Developing Novel Information Interaction and Transmission Experiences Through Sound and Color

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Abstract

As computer usage continues to expand throughout the world, the way in which we interact with digital information becomes increasingly important. Designing human-computer interaction experiences that leverage diverse media such as sound and color expand on previously established techniques. Two specifications are proposed. The hashtone specification accomplishes information fingerprinting through sound and color. The tonemap specification achieves digital information transmission using sound and allows for better visibility and a novel data transfer interface. Hashtone converts any digital information into a unique sound sequence and color; tonemap has the functionality to encode a message into sound as well as decode sound to retrieve a message. A proof of concept implementing these specifications was created and tested as a publicly available static website. During this research, a method to link decentralized, trustless blockchains was developed. This method leverages the work of one blockchain (A) to record and protect the state of another blockchain (B). An incentive mechanism is proposed in the form of tokens on blockchain B. These specifications have applications in the rising space of cryptocurrency transactions and low-infrastructure many-user digital communications. This research expands the human-computer interface and improves the verification, transmission, and protection of cryptographic information.