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O26 - Development of a Standardized Sonification Mapping Framework for Deep-Sky Objects Associated with the Perseus Arm Toward Inclusive Astronomy Education for Learners with Dyslexia

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Astronomy education relies heavily on visual and text-based instructional materials, creating learning challenges for students with dyslexia due to difficulties in reading and language processing. Although sonification has emerged as an alternative method for representing scientific data through sound, its application in astronomy education remains limited. This study presents a sonification processing pipeline that transforms astronomical image data into MIDI-based auditory representations. Astronomical images from the NASA/WISE survey, including the Heart and Soul Nebula, IC 348, and SH2-235, were processed through dataset selection, image preprocessing, RGB channel decomposition, pixel intensity analysis, grayscale conversion, feature mapping, and MIDI generation. The resulting MIDI outputs, visualized using piano roll representations, demonstrated that variations in image characteristics produced distinct auditory patterns while maintaining a consistent processing workflow. The study demonstrates the technical feasibility of transforming astronomical image data into structured auditory representations, providing a foundation for accessible and multisensory approaches to astronomy education.

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