

Visualizing sidereal and solar time in honor of Karl Jansky: Internship at IEEE, AT&T, and Bell Labs

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Abstract

To understand the significance of any discovery, one must grasp the historical context and collective efforts behind its emergence. Bell Labs, an institution famed for foundational advances in communications and physics, provided the environment where Karl Jansky first identified radio emissions from the Milky Way. This project, supported by mentorship from the IEEE, AT&T Labs, and Bell Labs, employs interactive visualizations of Earth and Mars time, a street clock representing Martian sidereal and solar time, and a novel digital sundial to bring these discoveries to a broad public audience. The digital sundial, the project's current focus, is designed to provide accurate digital timekeeping down to the minute. Furthermore, physical models are being developed for dual-sided street clocks destined for placement at the Dr. Robert Woodrow Wilson Park. These clocks, featuring vintage accessories, will allow viewers to directly compare solar and sidereal timekeeping systems. To engage younger audiences, we will utilize the Nano Banana AI model to help children visualize themselves on Mars, using technology to spark a lasting interest in astronomy. Our goal is to implement these prototypes into physical models that inspire the future by showcasing astronomical phenomena both old and new by the end of the semester. Ultimately, this project connects modern science to the historical roots of radio astronomy in a way that remains engaging and accessible to all ages.

Index Terms

AT&T, Bell Labs, Karl Jansky, sidereal time, internship