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Closest Celestial Body Search Using KD Trees

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Abstract



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Abstract:

A Binary Search Tree is expanded into a KD Tree to handle the multi-dimensional key searches. A discriminator makes the KD tree different from the BST. This discriminator will take branching decisions at every level based on the key search. It can handle multi-dimensional coordinate object searching. K-d trees enable $O(k \log n)$ lookup times for the k nearest points to some point x . This is extremely useful, especially in cases where an $O(n)$ lookup time is intractable already. In this work, a kd tree has been created based on how a celestial body is positioned in relation to the sun. It aims at finding the minimum in a particular dimension, searching for a celestial body and its nearest neighbor.

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