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# Satellite orbit prediction using big data and soft computing techniques to avoid space collisions

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**Abstract-**

**The number of satellites and debris in space is dangerously increasing through the years. For that reason, it is mandatory to design techniques to approach the position of a given object at a given time. In this paper, we present a system to do so based on a database of satellite positions according to their coordinates (x,y,z) for one month. We have paid special emphasis on the preliminary stage of data arrangement, since if we do not have consistent data, the results we will obtain will be useless, so the first stage of this work is a full study of the information gathered locating the missing gaps of data and covering them with a prediction. With that information, we are able to calculate an orbit error which will estimate the position of a satellite in time, even when the information is not accurate, by means of prediction of the satellite’s position. The comparison of two satellites over 26 days will serve to highlight the importance of the accuracy in the data, provoking in some cases an estimated error of 4% if the data are not well measured.**

**Index Terms- orbit prediction; error position estimation; debris; data accuracy**



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