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A WEB BASED SEMI AUTOMATIC FRAME WORK FOR ASTROBIOLOGICAL RESEARCHES

Abstract

Astrobiology addresses the possibility of extraterrestrial life and is founded upon the premise that signatures of life encountered in space will be recognizable. Bio-Geo signatures should reflect fundamental and universal characteristics of life, and thus are not restricted solely to those attributes that represent local solutions to the challenges of survival. Hence life indicators should be modelled with reference to temporal and environmental variations specific to each planet. In this paper, we investigate a semi automatic open source frame work for the accurate interpretation of life signatures from extraterrestrial images, by facilitating public participation in a similar way as adopted by SETI. We also discuss various feasible methodologies and advanced techniques that can be adopted for the purpose. Data from different missions/sources should be intelligently integrated for making decisions and the bulk availability of data demands the use of dynamic semi automatic knowledge systems for the purpose. The involvement of public for identification of patterns can bring a thrust to the mission; however lack of skill may be a matter of concern. This can be made good by using semi automatic approaches where machine and man will work side by side, thus integrating rational nature of man with acquired skill of machine. Different advanced intelligent methodologies may aid the integration of this human machine analysis. The advanced learning and random modelling approaches can be used to dynamically model bio-geo signatures with reference to the specific conditions. This work presents a frame work for semi automatic modelling of the extra terrestrial features using advanced web mining and artificial intelligence technologies. The image data can be made available through web portal and people can be facilitated to access it like in the case of SETI. A prior level accuracy checking can also be automated and this will help the system to improve itself. The users may be ranked based on their accuracy points and high skilled user's actions can be used for improving the system performances. The data marked to be of high signature content by lower skilled users can be automatically cross validated and can be moved to higher category users for thorough high skilled analysis. The system will also help to provide a deep public understanding about space agency's works and facilitate mass involvement in the astrobiological studies.