



NATIONAL AERONAUTICS
AND SPACE ADMINISTRATION

Intelligent Systems Division



Dr. Kamalika Das Gives Keynote Talk at 2018 International Conference on Information Technology

Data Sciences group member Dr. Kamalika Das gave a keynote presentation at the 15th International Conference on Information Technology: New Generations at Las Vegas, Nevada, on April 16th, 2018. The talk titled, "Using Machine Learning to Study the Effects of Climate on the Amazon Rainforests", described the work Kamalika did as part of her 2014 NASA Advanced Information Systems Technology (AIST) grant on using machine learning and genetic programming to quantify the dependence of rainforest vegetation on a variety of climatic factors.

BACKGROUND: The tropical rainforests are the largest reserves of terrestrial carbon and, therefore, the future of these rainforests is a question that is of immense importance in the geoscience research community. With the recent severe Amazonian droughts in 2005 and 2010, there is growing concern that these forests could succumb to precipitation reduction, causing extensive carbon release and feedback to the carbon cycle. However, there is no single ecosystem model that quantifies the relationship between vegetation health in these rainforests and climatic factors. In this work we combine a Classification and Regression Tree-like (CART) hierarchical modeling with genetic programming-based symbolic regression in order to discover data-driven ecosystem models that best explain the greening and browning of regions within the rainforest as rainfall and temperature patterns change over time.

The International Conference on Information Technology - New Generations (ITNG) is an annual event focusing on state-of-the-art technologies pertaining to digital information and communications. The applications of advanced information technology to such domains as astronomy, biology, education, geosciences, security, and health care are among topics of relevance to ITNG. ITNG has a history of hosting NASA scientists as invited speakers for different editions of the conference. NASA Ames Chief Information Officer Jerry Davis, Kepler Project Manager Roger Hunter, and Exploration Technology (Code T) Director Rupak Biswas are some of the previous speakers at the conference.

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