



El Departamento de Informática de la Universidad Técnica Federico Santa María tiene el agrado de invitar a la comunidad universitaria a un nuevo coloquio a realizarse el día **Jueves 24 de Septiembre a las 11:30 Hrs** en el **Aula Tecnológica** del Departamento, en Casa Central. La charla se transmitirá por videoconferencia al Laboratorio de Programación Avanzada (LPA) en Campus San Joaquín.

Título

Using DBSCAN and MPI4Py to Detect Regions of Interest
in ALMA FITS Files

Invitado



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Mini Bio

Alejandro Barrientos is an Archive Specialist at the Joint ALMA Observatory since 2010, working in the ALMA Department of Computing. Degree on Informatics Engineering at the Universidad Central de Chile, joined the PhD. in Computer Science program at UTFSM in late 2012, his research interests lie within the Astroinformatics field and Astronomical Archiving Systems.

Resumen

As astronomical instruments are growing in size, so is the data they deliver, the time will come when the data files will no longer be able to be analyzed manually due to the sheer size of the data cube, this talk, intended for audience without background in astronomy, is about my research to create an algorithm that is able to detect the "interesting" regions inside an ALMA data cube (a FITS file) and generate spectra where different types of molecules could be found, I have developed a basic model where I use the DBSCAN clustering algorithm to detect regions of high emission, and for each cluster, generate an integrated emission spectrum that is analyzed for peaks, an astronomical catalogue called Splatalogue is queried for molecular information in the peak frequencies.

In order to enhance the processing capabilities of the algorithm, an implementation of the MPI approach was made, using the mpi4py libraries, allowing a 3.78x speed increase in the testing environment.

Lugar y Fecha

Jueves 24 de Septiembre de 2015, 11:30 Hrs.
Aula Tecnológica, Departamento de Informática UTFSM, Casa Central
LPA, DI UTFSM, San Joaquín (Videoconferencia)