Tuesday, November 7

Week 45 of 2023

- Home
- Moon
- Work
- UA Holidays
- NOAO
- Siri Suggestions
- ADASS 2023 Calendar
- Telescopes

November 2023

S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

December 2023

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

7AM

7:30AM MORNING COFFEE
Where
POSTER ROOM (Catalina/Tucson rooms)
[https://union.arizona.edu/infodesk/maps/sumc_maps.php?

8AM

8:30AM C301: UX for Docs: Documentation Engineering at Rubin
8:45AM C302: NASA SMD Information Policy: Lets All Be FAIR

9AM

9:00AM INVITED I301: User Experience and its role in astronomy
Where
9:30AM C303: Firefly: Using VO Protocols to Build Dynamic UIs
9:45AM C901: Revealing the Unknown Unknowns: Citizen Science as

10AM

10:00AM COFFEE BUFFET
Where
POSTER ROOM (Catalina/Tucson rooms)

10:15AM FOCUS DEMO F801: EXPLORE science platform and sci-

11AM

11:00AM C401: "You might also like these images": unsupervised
11:15AM C402: Detection and classification of radio sources with
11:30AM C403: Deep learning in automatic detection of radio 21 cm
11:45AM C404: A new architecture of Convolutional Neural Networks

Noon

12:00PM LUNCH BREAK

1PM

1:30PM C405: Developing an efficient large-scale machine learning
1:45PM C406: Learning from the Machines

2PM

2:00PM INVITED I401: AI in Astronomy
Where
2:30PM C407: Experimenting with Large Language Models and vec-
2:45PM C801: Gemini Data Reductions - Saving Legacy Software

3PM

3:00PM AFTERNOON BREAK
Where
POSTER ROOM (Catalina/Tucson rooms)
[https://union.arizona.edu/infodesk/maps/sumc_maps.php?

4PM

4:00PM ADASS BANQUET

5PM

6PM

6:30PM SPECIAL I001: OSIRIS REx Sample Return News and the OSIRIS-APEX

7PM

8PM

9PM

10PM

• Timed Events

7:30AM to 8:30AM MORNING COFFEE
Location: Where
POSTER ROOM (Catalina/Tucson rooms)
[https://union.arizona.edu/infodesk/maps/sumc_maps.php?level=level3]
Notes: Event Description

Coffee breaks will be held in the poster room.

Hot beverage service.

8:30AM to 8:45AM C301: UX for Docs: Documentation Engineering at Rubin
Location: Where
BALLROOM
[https://union.arizona.edu/infodesk/maps/sumc_maps.php?level=level3]
Notes: Event Description

THEME: USER EXPERIENCE FOR ASTRONOMICAL SOFTWARE
[https://adass2023.lpl.arizona.edu/themes-0#az-accordion--3]

pretalx [https://pretalx.com/adass2023/talk/PFVRKK/]

At Rubin Data Management we set out early in Construction to create a healthy documentation culture. In order to provide a good UX for documentation contributors, we developed a documentation infrastructure (now also used by the NASA SphereX project) that values low-friction documentation creation and guaranteed-accurate documentation techniques. By using development tools such as Github Actions, Slack bots and Jupyter Notebooks, we are battling successfully the traditional view of documentation as the chore of last resort for both writers and readers.

8:45AM to 9:00AM C302: NASA SMD Information Policy: Lets All Be FAIR
Location: Where
BALLROOM
[https://union.arizona.edu/infodesk/maps/sumc_maps.php?level=level3]
Notes: Event Description

THEME: USER EXPERIENCE FOR ASTRONOMICAL SOFTWARE
[https://adass2023.lpl.arizona.edu/themes-0#az-accordion--3]

pretalx [https://pretalx.com/adass2023/talk/FGHH3C/]

The NASA Science Mission Directorate (SMD) Information Policy (whimsically named "SPD-41a") prescribes that NASA data be findable, accessible, interoperable, and reusable (FAIR). Despite the catchy acronym, these aims are not new: the scientific community has in principle always strived for data to meet these criteria. Of course, the devil is in the details. There is no "FAIR" specification or unit test to pass, so what "findable" or "accessible" might mean will vary between user groups, communities from different backgrounds, different
archives, and even different datasets within an archive. (Certainly no one wants to think the data they make available are not easy to find.) This talk will explore these ideas in more detail, discuss NASA's efforts in implementing FAIR for SMD data, and an overview of how FAIR astronomical data actually are.

9:00AM to 9:30AM INVITED I301: User Experience and its role in astronomy
Location: Where
BALLROOM
[https://union.arizona.edu/infodesk/maps/sumc_maps.php?level=level3]
Notes: Event Description

THEME: USER EXPERIENCE FOR ASTRONOMICAL SOFTWARE

[https://adass2023.lpl.arizona.edu/themes-0#az-accordion--3]

pretalx [https://pretalx.com/adass2023/talk/GSS33T/]

In this talk I will explore the fundamental principles of user experience (UX), emphasize its importance in astronomy, and share some techniques we can use to incorporate UX-centered design into our workflows.

Drawing a connection to previous trends of increased awareness and discipline surrounding version control, testing and documentation, I will explore how the rise of UX practices align with the broader goals of improving scientific workflows.

Additionally, I will present practical techniques and strategies that can be implemented immediately to integrate UX considerations into our software development processes. By embracing UX principles, we can create more user-friendly, inclusive and intuitive tools that empower users and raise the scientific output of the community.

9:30AM to 9:45AM C303: Firefly: Using VO Protocols to Build Dynamic UIs
Location: Where
BALLROOM
[https://union.arizona.edu/infodesk/maps/sumc_maps.php?level=level3]
Notes: Event Description

THEME: USER EXPERIENCE FOR ASTRONOMICAL SOFTWARE
[https://adass2023.lpl.arizona.edu/themes-0#az-accordion--3]

pretalx [https://pretalx.com/adass2023/talk/DCPSGU/]

The open-source Firefly toolkit for astronomical data exploration, display, and analysis has extensive web-based visualization capabilities. Firefly provides highly interactive, linked visualizations for image and catalog data, supporting FITS and HiPS images, tables, and scientific charts. These components include many UI features that assist archive users to better understand their data.

Firefly has been used to construct archive interfaces for many missions, each with its own unique display requirements to help scientists get the most out of their data. Supporting these has been difficult and often requires specialized code for each mission despite superficial similarities in the requirements. This takes development effort away from creating new common, reusable capabilities, and it has also made it difficult to deliver new features back to the interfaces for legacy missions.

We have embarked on a long-term effort toward building UIs in which mission-specific features are produced by common code reacting to mission-specific metadata by the data services. This has been facilitated by a simultaneous increasing use of IVOA standards and services internally to connect the Firefly applications to the back-end mission data. These efforts have begun to bear substantial fruit.

Using IVOA standards to describe the data, we are able to build query interfaces and display search results in ways that make the most sense for that particular data set. Firefly uses the TAP, ObsCore, UWS, VOTable, and DataLink standards extensively to support this. We've found DataLink's "service descriptors" particularly useful in enabling the creation of metadata-driven UIs. Unfortunately, these standards don't always go far enough to describe a UI to the level of detail that we need. Consequently, we have worked together with our back-end team partners, at IPAC and in the Rubin Observatory, to find ways to extend the standards in a backwardly compatible way.

This talk demonstrates these new capabilities and how we are using VO protocols and Firefly's extensive data visualization capabilities to create dynamic UIs and search results displays. It will exemplify the powerful experiences that will be available to users of the IPAC and Rubin archives.

IPAC Firefly was created in IRSA, the NASA/IPAC Infrared Science Archive (http://irsa.ipac.caltech.edu) and its development is extensively supported by NASA and by the NSF, through the Vera C. Rubin Observatory. Firefly is the core of applications serving many project archives including Spitzer, WISE, ZTF, SOFIA and others. It is also used in IRSA's general Finder Chart and IRSA Viewer applications. Firefly underpins the Portal Aspect of the Rubin Science Platform as well as being used, via its Python API, for visualizations in notebooks. The NED and NASA Exoplanet Archive use the Firefly JavaScript API inside their web applications.

GitHub: https://github.com/Caltech-IPAC/firefly

9:45AM to 10:00AM C901: Revealing the Unknown Unknowns: Citizen Science as a Tool for Exploring Large Data Sets
Location: Where
BALLROOM
[https://union.arizona.edu/infodesk/maps/sumc_maps.php?level=level3]
Notes: Event Description

THEME: OTHER CREATIVE TOPICS IN ASTRONOMICAL SOFTWARE
[https://adass2023.lpl.arizona.edu/themes-0#az-accordion--9]

pretalx [https://pretalx.com/adass2023/talk/WRV97X/]

We report results and key lessons from the development and implementation of "The Daily Minor Planet", a citizen science project developed by the Catalina Sky Survey using nightly data from our G96 survey telescope and hosted by Zooniverse. The project asks volunteers to review candidate detections of asteroids and distinguish between real and false detections. Key lessons to be covered include what results have revealed about our normal moving object detection pipeline, managing large user bases for optimal results, and statistical methods for analyzing user's responses and managing discovery bias in users. "The Daily Minor Planet" is live and can be found at:
https://www.zooniverse.org/projects/fulsdavid/the-daily-minor-planet

10:00AM to 11:00AM COFFEE BUFFET
Location: Where
POSTER ROOM (Catalina/Tucson rooms)
[https://union.arizona.edu/infodesk/maps/sumc_maps.php?level=level3]
Notes: Event Description

Coffee breaks will be held in the poster room.

Continental buffet.

10:15AM to 10:45AM FOCUS DEMO F801: EXPLORE science platform and scientific data applications for space sciences
Location: Where
BALLROOM
[https://union.arizona.edu/infodesk/maps/sumc_maps.php?level=level3]
Notes: Event Description

PREV
[https://adass2023.lpl.arizona.edu/event-categories/tuesday-session-1]NEXT
[https://adass2023.lpl.arizona.edu/event-categories/tuesday-session-2]

THEME: CLOUD INFRASTRUCTURES FOR ASTRONOMICAL DATA ANALYSIS
[https://adass2023.lpl.arizona.edu/themes-0#az-accordion--8]

pretalx [https://pretalx.com/adass2023/talk/RFEFWG/]

This focus demo session presents the science platform and the scientific data applications for space sciences delivered by the EXPLORE project (Horizon 2020 EU project - Nov 2020 - Dec 2023).

EXPLORE platform

The EXPLORE platform (https://explore-platform.eu) is a cloud-based science platform allowing users to remotely run different science applications in their web browser. App developers can easily deploy their own (dockerized) apps using a simple on-boarding procedure. EXPLORE occupies a niche in the broader landscape of open science platforms and the European Open Science Cloud initiative.

Personal workspaces allow users to persist and share data between applications. Users can also give other users access to specific files/folders. The platform provides developers a streamlined process

to deploy, test, and share their (dockerized) applications. Developers can link their application to shared datasets uploaded to the platform, define meta-data, set environment variables, and assign minimum resource requirements.

The EXPLORE platform also has a planetary space science browser which allows to easily find data for a selected number of planetary missions. These data can then be previewed and saved to the user's workspace for further analysis (for example, with one of the available apps on the platform).

At this time, the platform hosts the applications from the EXPLORE project as well as third-party apps provided by the Europlanet RI-2024.

In the first part of this demo session we will show how to create (deploy) a new app on the platform.

EXPLORE scientific data applications (apps)

The EXPLORE science applications are demonstrators and blue-prints (open-source licence) for containerised scientific web applications that can be deployed locally or remotely, on different science platforms. Each SDA targets specific science use cases for different astronomy or planetary science communities (e.g., stellar photometry, interstellar medium, stellar spectroscopy, galactic archaeology, lunar exploration) and are deployed also on external platforms such as ESA Datalabs and Rosetta science platform. The goal is to supply methodologies, tools, and inspiration for others to create their own web apps and services!

In the second part of this demo session we will highlight one or two of the EXPLORE apps (the ones that get most votes from the participants). We will also give insights into their basic structure and the different frameworks used for their realisation.

*Acknowledgement: This project has received funding from the European
Union's Horizon 2020 research and innovation programme under grant agreement No 101004214.*

**11:00AM to 11:15AM C401: "You might also like these images": unsupervised
affine-transformation-independent representation learning for the ALMA
Science Archive**
Location: Where
BALLROOM
[https://union.arizona.edu/infodesk/maps/sumc_maps.php?level=level3]
Notes: Event Description

THEME: AI IN ASTRONOMY
[https://adass2023.lpl.arizona.edu/themes-0#az-accordion--4]

pretalx [https://pretalx.com/adass2023/talk/EJPSMN/]

With the exponential growth of the amount of astronomical data with time, finding the needles in the haystack is getting increasingly more difficult. Traditionally, archives have described their observations with metadata and made those searchable through web interfaces as well
as programmatically. The next frontier for science archives is to also allow searches on the content of the observations themselves. As a step into this direction, we have implemented a prototype of a recommender system for the ALMA Science Archive. We use self-supervised affine-transformation-independent representation learning of source morphologies for the similarity estimation through contrastive learning with a deep neuronal network. Once the neuronal network is trained, the feature vectors for all images - both for continuum images and for peak-flux images of datacubes - are evaluated. In a next step, we compute the similarity matrix holding for each image the corresponding 1000 most similar images, ordered by
their pairwise similarity. A kd-tree is used to speed up that computation from O(n^2) to O(log n). Our prototype interface then shows the most-similar images of which the archival researcher can select the most interesting ones. When they do select an image on the interface, we use a scoring algorithm to instantaneously compute the combined similarity of the all already selected images and reorder the displayed remaining images accordingly. Each selection thus further refines the similarity display. Finally, we use k-means clustering on the feature vectors of the displayed images to provide selectable 'source morphology categories' for a quick-select option. We conclude from the prototype that an image similarity interface can be a valuable asset to science archives and we are looking forward to discussing this work and related ideas with the ADASS community.

11:15AM to 11:30AM C402: Detection and classification of radio sources with deep learning
Location: Where
BALLROOM
[https://union.arizona.edu/infodesk/maps/sumc_maps.php?level=level3]
Notes: Event Description

THEME: AI IN ASTRONOMY
[https://adass2023.lpl.arizona.edu/themes-0#az-accordion--4]

pretalx [https://pretalx.com/adass2023/talk/ASHZGR/]

New software developments in data post-processing are being made within the SKA precursor communities to enable extraction of science information from radio images in a mostly automated way. Many of them
exploit HPC processing paradigms and machine learning (ML) methodologies for various tasks, such as source detection, object or morphology classification, or anomaly detection.

In this context, we are developing several ML-based tools to support the scientific analysis conducted within the ASKAP EMU and MeerKAT surveys. One tool employs deep neural networks to detect compact and extended radio sources and imaging artifacts from radio continuum images. Another tool uses different ML techniques to classify compact sources into different classes (galaxy, QSO, star, pulsar, HII, PN, YSO) using radio and infrared multi-band images. Furthermore, we have developed self-supervised models for radio data representation learning, and generative models to produce synthetic radio image data for data challenges or model performance boosting.

These tools have been trained and tested on ASKAP EMU and SARAO MeerKAT Galactic Plane (SMGPS) survey data. An overview of the results achieved will be presented at the workshop, along with details on the ongoing activities and future prospects.

**11:30AM to 11:45AM C403: Deep learning in automatic detection of radio 21 cm neutral
hydrogen absorption**
Location: Where
BALLROOM
[https://union.arizona.edu/infodesk/maps/sumc_maps.php?level=level3]
Notes: Event Description

THEME: AI IN ASTRONOMY
[https://adass2023.lpl.arizona.edu/themes-0#az-accordion--4]

pretalx [https://pretalx.com/adass2023/talk/Y9PHYT/]

FLASH is the First Large Absorption Survey in HI which surveys for neutral hydrogen (HI) absorption lines in the intermediate redshifts (0.42 - 1.0), across the entire sky south of Declination +18 degrees from spectra of 100,000 bright continuum sources, using the Australian SKA Pathfinder (ASKAP) telescope. FLASHfinder is a Bayesian method based automated source finder to identify absorption candidates. However, verification of true absorption detections from the candidate list is currently performed manually and true detections are outnumbered by artifacts (false positives). We present a new deep learning (DL) based source finder to automatically distinguish true detections from artifacts from the FLASH Pilot Survey. To address the issue of limited true detections in the training dataset, we employ a 1D Deep Convolutional Generative Adversarial Network (1D DCGAN) to synthesize true detections. For spectral line classification, we employ a 1D Convolutional Variational Autoencoder (1D CVAE) which combines the power of CNNs to capture local spectral features with VAEs' capability to learn meaningful latent space representations. Our results showcase the great potential of DL in automatic detection of HI absorption more accurately and robustly which can help reduce the burden of manual verification in large all-sky surveys.

Tuesday, November 7

Week 45 of 2023

11:45AM to 12:00PM C404: A new architecture of Convolutional Neural Networks for astronomical data
Location: Where
BALLROOM
[https://union.arizona.edu/infodesk/maps/sumc_maps.php?level=level3]
Notes: Event Description

THEME: AI IN ASTRONOMY
[https://adass2023.lpl.arizona.edu/themes-0#az-accordion--4]

pretalx [https://pretalx.com/adass2023/talk/WNDAKA/]

The emergence of deep Convolutional Neural Networks (CNNs) has brought
about a significant shift in the realm of computer vision. There have been many successful applications of CNN architectures for various image-related tasks. Nevertheless, these architectures may not be the best choice for astronomical data. Despite the advancements in Deep Learning, the inner structure of neural networks and how they interpret and understand the world remains a black box. A deeper understanding of how exactly they distinguish available objects and patterns in order to accurately predict new data could enable us to create more efficient and effective models which we need for better processing of our data.

In this talk, we investigate the limitations of the current neural network architectures when applied to astronomical data. Our research and experience have revealed that the existing networks may not be well-suited for handling the unique characteristics of the astronomical data. Our findings suggest that there are multiple issues that could potentially impact the performance of these networks. Despite the investment in high-quality astronomical data in FITS format, existing neural networks are unable to fully take advantage of it due to limitations in handling JPEG-format images, resulting in the loss of valuable data early on in the pipeline. In addition, while there are ways to use the FITS files, such as converting them to Numpy arrays, there are some problems that need to
be addressed when dealing with them. In many surveys, we used many filters for astronomical data. We can use only Grayscale or JPEG format may not fully capture the complexities of astronomical data. Additionally, the presence of nan values in the data can negatively impact the performance of the network.

To eliminate such and other problems, we used Gnuastro which is a software platform for processing astronomical data. Its extensive library makes it a suitable tool for tackling the challenges encountered in working with astronomical data. We have thoroughly explored these issues and are planning to use Gnuastro to implement a new architecture for the neural networks, which we hope will mitigate the existing problems with handling astronomical data.

12:00PM to 1:30PM LUNCH BREAK
Notes: Event Description

There are many lunch options with walking distance or via the free streetcar or if you are in a hurry on the 2nd and 3rd floors of the Student Union.

1:30PM to 1:45PM C405: Developing an efficient large-scale machine learning pipeline to classify the millions of NASA TESS light curves in search for variable stars
Location: Where
BALLROOM
[https://union.arizona.edu/infodesk/maps/sumc_maps.php?level=level3]
Notes: Event Description

THEME: AI IN ASTRONOMY
[https://adass2023.lpl.arizona.edu/themes-0#az-accordion--4]

pretalx [https://pretalx.com/adass2023/talk/PPXGH8/]

The NASA Transiting Exoplanet Survey Satellite (TESS) is observing millions of stars each month. The vast amounts of light curves that are being generated from these photometric observations contain a wealth of information for asteroseismology, binarity and rotation studies. However, before these light curves can be used for stellar structure and evolution studies, we first need to be able to identify the relevant stars in this massive data set. The TESS Data for Asteroseismology (T'DA) working group therefore created an automated open-source machine learning pipeline to classify the millions of light curves delivered by TESS according to their stellar variability types. The pipeline is highly-parallelized and has been optimized for large-scale computing infrastructures. Furthermore, it has been developed in a modular way such that new state-of-the-art classifiers in search for other variability types can easily be added. In this contribution, we will present the pipeline and the structure of the machine learning classifiers, and explore how the pipeline can be used for other space missions and large ground-based observatories.

1:45PM to 2:00PM C406: Learning from the Machines
Location: Where
BALLROOM
[https://union.arizona.edu/infodesk/maps/sumc_maps.php?level=level3]
Notes: Event Description

THEME: AI IN ASTRONOMY
[https://adass2023.lpl.arizona.edu/themes-0#az-accordion--4]

pretalx [https://pretalx.com/adass2023/talk/FMWKWJ/]

Machine learning has been widely applied to clearly defined tasks in astronomy and astrophysics. Contrastively, in a sequence of our recent works we have gone beyond tasks and have focused on letting deep architectures ``listen'' to the real, raw, astrophysical data, letting it speak for itself.

During the talk, I will showcase two implementations of this idea on stellar spectra: The first work, called Astro-machines, demonstrates how a machine can start to make sense of raw numerical data and begin learning known astrophysical parameters from them, without being asked
to do so! The second one, called Stellar Karaoke, shows how machines can provide us with novel insights into a long-standing problem, namely the removal of adversarial atmospheric effects, just by examining a large number of raw numerical vectors.

2:00PM to 2:30PM INVITED I401: AI in Astronomy
Location: Where
BALLROOM
[https://union.arizona.edu/infodesk/maps/sumc_maps.php?level=level3]
Notes: Event Description

THEME: AI IN ASTRONOMY
[https://adass2023.lpl.arizona.edu/themes-0#az-accordion--4]

pretalx [https://pretalx.com/adass2023/talk/PBKFCR/]

This talk is a journey exploring the cosmos through the intersection of AI and astronomy. We'll see how machine learning, specifically computer vision and parameter inference, has revolutionised the identification and analysis of celestial bodies. I'll show you how AI has enriched my own projects, from modelling clusters of galaxies to enhancing astronomical datasets, illuminating the cosmos like never before. Importantly, I'll also delve into the role of language models, such as ChatGPT, in astronomical research. By facilitating improved data interpretation and communication, these models are not only transforming how we understand the cosmos, but also how we share these
discoveries. However, it's also important to emphasise the need for careful consideration of ethics in the deployment of AI, to ensure scientific integrity and inclusivity.

2:30PM to 2:45PM C407: Experimenting with Large Language Models and vector embeddings in NASA SciX
Location: Where
BALLROOM
[https://union.arizona.edu/infodesk/maps/sumc_maps.php?level=level3]
Notes: Event Description

THEME: AI IN ASTRONOMY
[https://adass2023.lpl.arizona.edu/themes-0#az-accordion--4]

Tuesday, November 7

Week 45 of 2023

pretalx [https://pretalx.com/adass2023/talk/EEHAHK/]

Open Source Large Language Models enable projects such as NASA SciX (i.e., NASA ADS) to think out of the box and try alternative approaches for information retrieval and data augmentation, while respecting data copyright and users' privacy. However, when large language models are directly prompted with questions without any context, they are prone to hallucination. At NASA SciX we have developed an experiment where we created semantic vectors for our large collection of abstracts and full-text content, and we designed a prompt system to ask questions using contextual chunks from our system. Based on a non-systematic human evaluation, the experiment shows a lower degree of hallucination and better responses when self-reflection is used. Further exploration is required to design new features and data augmentation processes at NASA SciX that leverages this technology while respecting the high level of trust and quality that the project holds.

2:45PM to 3:00PM C801: Gemini Data Reductions - Saving Legacy Software With The Cloud
Location: Where
BALLROOM
[https://union.arizona.edu/infodesk/maps/sumc_maps.php?level=level3]
Notes: Event Description

THEME: CLOUD INFRASTRUCTURES FOR ASTRONOMICAL DATA ANALYSIS
[https://adass2023.lpl.arizona.edu/themes-0#az-accordion--8]

pretalx [https://pretalx.com/adass2023/talk/MALG8L/]

This version of the software has been deprecated - a phrase that has struck fear into the heart of every user. Naturally, scientific endeavours move at a slower pace than does software development. Moreover, research software development efforts are historically woefully underfunded, which is especially true for code modernization projects. And so, it is inevitable that every scientist will eventually be faced with having to install legacy software on modern platforms. The successful build of iraf from scratch on a modern linux machine need not be a right of passage. The data reduction software platforms of even modern facilities such as the Gemini telescopes rely on software that has been deprecated for so long that installation on some popular modern platforms is impossible. Some technological developments however, can greatly alleviate this problem. With the advent of software containers, even the most obsolete of software can be made to work without too much hassle, and even enable new compute
capabilities not previously available with legacy systems. The Gemini team is undergoing the herculean effort of converting the most used iraf reduction routines into a modern python environment, though support for some legacy instruments is not planned. In the interim, the popularity of OSX means that many Gemini users cannot use the Gemini-provided tools to reduce their data. In this presentation I will discuss my use of Docker to provide an environment which contains many generations of the Gemini software stack. With the choice of an appropriate OS, installation of all three versions of the Gemini software stack - iraf, Dragons, and Dragons 3 - was a relatively painless process. Beyond the ability to launch otherwise incompatible software, the resulting container has the notable advantage of being usable in the cloud; I will demonstrate the use of the Gemini Docker container on the Canadian Advanced Network for Astronomical Research (CANFAR), accessible by the entire Canadian astronomical community. In
this presentation I will advocate for the use of compute environments that utilize software containers over software environments that are common to all users like the Rubin Science Platform. A container-based environment can provide flexibility and access to critical and common pieces of legacy software that would otherwise be impossible to maintain on common software platforms. Moreover, with a small amount
of education, the burden of maintenance does not solely fall on a small underfunded development team, but can largely be shouldered by the more abundant power users, like it is on CANFAR.

3:00PM to 4:00PM AFTERNOON BREAK
Location: Where
POSTER ROOM (Catalina/Tucson rooms)
[https://union.arizona.edu/infodesk/maps/sumc_maps.php?level=level3]
Notes: Event Description

Coffee breaks will be held in the poster room.

Afternoon tea and snacks.

4:00PM to 10:00PM ADASS BANQUET
Notes: Event Description

PREV
[https://adass2023.lpl.arizona.edu/event-categories/tuesday-session-3]

The ADASS Banquet will be on Tuesday, November 7, 2023 at the Pima Air
& Space Museum [https://pimaair.org]. Buses will be provided, leaving from the conference venue at 4:00 p.m. and returning about 9:00 p.m.

The banquet will be preceded by a special tour of the Stratospheric Observatory For Infrared Astronomy
[https://science.nasa.gov/mission/sofia/]. ADASS will be the first group to tour SOFIA following its recent retirement and relocation to the Museum.

Next, there will be a special presentation
[https://adass2023.lpl.arizona.edu/events/special-osiris-rex-sample-return-news-and-osiris-apex-mission]
by Mike Nolan, Deputy PI of OSIRIS-APEX
[https://osirisrex.arizona.edu/osiris-apex], the retargeted OSIRIS-REx spacecraft that will visit and study the asteroid Apophis
[https://science.nasa.gov/solar-system/asteroids/apophis/] for 18 months after the Potentially Hazardous Asteroid's dramatic close approach to Earth on April 13, 2029.

Following the talk, Mariachi Corazón Latino will entertain us. This drew two exclamation points from the events supervisor at the museum: _"FANTASTIC! We have had Mariachis out for other events and they sound amazing in the hangar!"_

A southwestern buffet will be served as you wander among historic aircraft
[https://www.nasa.gov/wp-content/uploads/2021/09/495839main_fs-030_sr-71.pdf].
"Cash" bar (credit cards only).

IMPORTANT Pima Air & Space Museum policy: No backpacks permitted. Small purses, camera bags, and diaper bags only.

[SOFIA over the Sierras]

6:30PM to 7:00PM SPECIAL I001: OSIRIS REx Sample Return News and the OSIRIS-APEX mission
Location: Where
Pima Air & Space Museum [https://pimaair.org/]
Notes: Event Description

SPECIAL TALK

The OSIRIS-REx spacecraft returned its sample of asteroid Bennu on September 24 after 7 years in space and 24 years of observations and planning. I will present short highlights of the mission, sample analysis news, and plans for the OSIRIS-APEX extended mission.