Home
Bot news
+ Bot Shop +
About Us
Forum
Communicate
Resources
Movies
Downloads
Link Exchange

NEWS

The Ibn Sina robot will

FEEDS

SYNDICATE

NEWS

>

Solar X-rays:

NORMAL

Geomagnetic Field:

QUIET

From n3kl.org

Home ▸ Bot news ▸ Robots in Space ▸

Apollo archive casts new light

By Administrator, on 06-08-2007 19:11

Views : 867 Popular

Favoured : 1

Published in : Bot News, Robots in Space

For nearly 40 years, the complete photographic record from the Apollo moon project sat in a freezer at NASA's Johnson Space Center in Houston, almost untouched, until now.

A new digital archive – created through a collaboration between ASU and NASA – is making available on the Internet high-resolution scans of original Apollo flight films. These startling images will be accessible to both researchers and the general public, to browse or download, at: apollo.sese.asu.edu.

The moon images filmed by astronauts during NASA's Apollo program have never been seen in high-resolution detail by the public, or even by most lunar scientists.

The new digital scanning project at ASU will use the original Apollo flight films. Previous scanning projects have been limited in scope, and none have used the original films that came back from the moon.

Mark Robinson, professor of geological sciences in the School of Earth and Space Exploration, is the lead scientist on the project. It's appropriate, as the moon has long been a focus in his career. In grade school Robinson avidly followed the Apollo missions, and after becoming a scientist, he worked on Clementine, a robotic moon mission in 1994.

Today, Robinson is the principal investigator for the Lunar Reconnaissance Orbiter Camera (LROC), a suite of three separate, high-resolution imagers on board NASA's Lunar Reconnaissance Orbiter, due for launch in October 2008.

"The scanning project fulfills a long-held wish of mine," says Robinson. "It'll give everyone a chance to see this unique collection of images with all the clarity they had when taken."

Second-hand moon

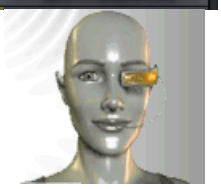
Between 1968 and 1972, NASA sent nine manned Apollo missions to the moon. Both from lunar orbit and on the surface, astronauts snapped about 36,000 photographs in various formats, from 35 mm to specially modified aerial-camera frames.

The orbital photographs record lunar surface features as small as 40 inches (1 meter) in size. The photos snapped on the surface, widely published and familiar to millions of people, document the astronauts' fieldwork while portraying the stark lunar landscape in all its grandeur.

Until now, this immense image archive from Apollo remained largely unexplored in complete detail. The reason is simple: Apollo photographs are all on film.

Each 35 mm roll, every Hasselblad and mapping camera magazine, contains a unique, first-generation record, preserved as it was when it came back from the moon. In fact, several Hasselblad rolls of film taken on the lunar surface show streaks and smudges from moon dust that worked its way into the camera.

SANDRA



MEMBERS

Username

Password

Remember me

Login

Forgot login?

No account yet?

Register

You are not logged in.

Latest Vids

Terminator Salvation Movie Trailer 3

Rating:

Savannah, Sit Here With Me

Rating:

Yuuka Vlog #1 - Commentary on the new HRP-4c Femal...

Knowing the films were literally irreplaceable, NASA made duplicate sets immediately after the missions, distributing them to various scientific libraries and research facilities around the world. Understandably reluctant to risk the originals, NASA has given only a handful of researchers access to the actual flight films.

This means, however, that lunar scientists have almost always worked with second- or third-generation copies. And publications aimed at general readers have had to make do with copies still further removed from the source. Multiple copying reduces sharpness and increases contrast, both effects combining to blur details the original films recorded faithfully.

Out of the cold

Maura White is an image archivist at NASA Johnson; she heads the Apollo scanning project on the Johnson side. Preparing each roll of film to be scanned, she says, takes a couple of days.

"We bring each film canister out of freezer storage," she explains. "And we leave the canister in a refrigerator for 24 hours." The freezer temperature is set at zero degrees Fahrenheit (minus 18 Celsius), while the fridge holds a steady 55 F (13 C).

"This lets the film warm up slowly," she says. "Then we leave the canister – still sealed – at room temperature for another 24 hours."

Once the film has warmed to room temperature, the canister is opened. The scan crew then inspects the film for damage, cleans it if needed and places it on the scanner. Once the roll has been scanned, project technicians return it to the canister. Then it's back to the deep freeze, where NASA hopes the film can remain forever, now that a digital version exists with full fidelity to the original.

"One of the great things about this project," White adds, "is that some of the people who worked here back during Apollo are working with us now. They were involved in handling the films when the astronauts came back from the moon and they are involved in the scanning. It's wonderful having their experience and knowledge on hand."

Sneaker-net

The project will take about three years to complete and will scan some 36,000 images. These include about 600 frames in 35 mm, roughly 20,000 Hasselblad 60 mm frames (color, and black and white), more than 10,000 mapping camera frames, and about 4,600 panoramic camera frames.

To extract all the details from the film, Robinson decided to scan the black and white images at a resolution of 200 pixels per millimeter, far beyond what most scanning involves. Color images are at 100 or 120 pixels per millimeter.

Says White, "We're going well past the film grain."

The scanner, built by Leica Geosystems, had its software specially modified for the project to increase the brightness range from the normal 12-bit tone depth to 14 bits. This means black and white images record more than 16,000 shades of gray. Color images will use 48-bit pixels to capture the full dynamic range of the film.

Combining high resolution and wide brightness range produces very large raw image files, notes Robinson. For example, in raw form, the scans of the Apollo mapping (metric) camera frames, each 4.7 inches square, are 1.3 gigabytes in size. Panoramic camera frames, each 5 by 48 inches, are 11.8 gigabytes each.

"Those are much bigger than most people would want to look at with a browser," explains Robinson, "even if their browser and Internet connection are up to the job."

So the Web site uses a Flash-based application called Zoomify, which lets users dive deep into a giant image by loading only the portion being examined. Links are available at the site for downloading images in several sizes, right up to the full raw scan.

Getting the images from NASA Johnson to ASU meant a return to an old form of moving files, usually dubbed "sneaker-net." Instead of clogging the Web servers at Johnson and ASU with enormous files, each week the scan crew loads the images onto 500-gigabyte removable hard drives, and ships them via UPS to the Tempe campus.

Once the images are on campus, undergraduate student workers load the files into the ASU system, and do basic processing, such as creating the smaller-resolution versions and assembling ancillary data on each image.

Nothing happens on the moon?

"One of the most interesting uses of these decades-old images," notes Robinson, "is that we can compare them with the images we'll get from the Lunar Reconnaissance Orbiter." Robinson notes that, while scientists could always visually compare an Apollo-era photographic print with a new digital image from LROC, having both in digital form speeds up the job and makes it more accurate.

Looking for lunar changes isn't just academic. Scientists have a good idea of how many tiny meteorites zip through space, thanks to studies made using satellites in Earth orbit. "And we know from the sizes of asteroids

how many large impacts are likely," says Robinson.

"But if we're sending astronauts back to the lunar surface for extended visits, we need data on how often medium-size meteorites strike the moon," notes Robinson. "Calculations tell us we should see some new lunar craters when we compare LROC's images with the old Apollo ones."

Beyond its utility for lunar exploration, Robinson is delighted the Apollo digitizing project is underway for another reason: "I think these images give everybody a beautiful look at this small, ancient world next door to us."

Last update: 06-08-2007 19:11

User Rating: / 0
Poor Best Rate

< Prev Next >

Educational

PAPER SCISSORS ROBOT BOT

07/05/2009

A robot at the centre of the development of artificial intelligence has gone on display, playing the child's game of rock, paper, scissors. Developers hope Berti (Bristol Elumotion Robotic Torso [...]

+ FULL STORY

Personal Robotics

ROBOTICS AND THE FUTURE

07/05/2009

Experts predict that an ageing world population and continuing global military conflicts will be the two main drivers of robot design and function in the coming years. Sp [...]

+ FULL STORY

General

THE IBN SINA ROBOT WILL SOON GET A FACEBOOK PROFILE PAGE

07/05/2009

+ FULL STORY

Personal Robotics

CEATEC 2008 COLLISION AVOIDANCE BOTS FROM NISSAN

03/10/2008

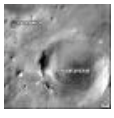
Behold the BR32C, a robotic ear featuring one of the newest and coolest technologies from one of the most “old style” companies, Nissan. Taking inspiration from your average bees, th [...]

+ FULL STORY

Robots in Space

MARS ROVER FACING TWO-YEAR JOURNEY

01/10/2008



The US space agency is to send its Mars rover Opportunity on a two-year trek to try to reach a crater called Endeavour. The robot will have to move about 11km to get to its new target - a di [...]

+ FULL STORY

Personal Robotics

THE ELEMENTS OF YOUR SMARTER HOME

01/10/2008

By Jason Palmer
Technology reporter, BBC News In his 1950 short story "There will come soft rains", Ray Bradbury's vision of the house of the future set the tone for how tec [...]

+ FULL STORY

Robots in Space

Other Articles

WHAT'S DRIVING CHINA SPACE EFFORTS?

01/10/2008

ANALYSIS
By Paul Rincon
Science reporter BBC China may want to send a message to the world
The launch of Shenzhou-VII by China is another reminder of the country's growing confidence and ca [...]

+ FULL STORY

- Space race conference in Glasgow
- Hubble Trouble
- Ministry scheme for urban robots

Nasa image of the Day

Ares V Scale Model

A worker completes installation of a 25-foot-tall scale model of the Ares V rocket outside the Visitor Center at NASA's Glenn Research Center in Cleveland.....

07 May 2009

800x600 1024x768 Large

Latest Posts

Re: TSCC BIG FINAL PART2
bill 06-05-09 20:09

TSCC BIG FINAL PART2
admin 05-05-09 16:02

The Sarah Connor Chronicles
admin 05-05-09 12:59

Re: Terminator 4 Official Trailer
admin 04-05-09 16:25

Re:Lely Robotic Barn Cleaner
admin 02-05-09 23:37

Lely Robotic Barn Cleaner
admin 02-05-09 23:29

Terminator Salvation - Official Trailer...
admin 02-05-09 22:57

My blog,and website
worldufospace 03-02-09 05:32

Popular of Late

Robots laugh, do puzzles, get dental care at Tokyo expo
Ministry scheme for urban robots

Most Read

1. Phoenix 1st Images reveal anomalies
2. Sink-Hole opens in Texas
3. Phoenix reveals more anomalous objects!
4. Pheonix Flames through to Polar Mars & Lands Safely! FIRST IMAGE!

Tag Clouds

able based built children company control designed development edinburgh features future ground high human iirobotics japan japanese just lecture like make mars mission need people possible power program research robosapien robot robotic robotics robots rover said says science scientists sensors shop site software space students systems team technology time toys university used using vision work world year 2003 2004 2006

By Zaragoza Clouds

Link Exchange

Error: no links to display