AI in Space Exploration

Artificial Intelligence · Answer Key · 18 Questions

1. Which NASA mission used the AEGIS (Autonomous Exploration for Gathering Increased Science) AI software to autonomously select rock targets for the Curiosity rover to analyze?

A) Mars Science Laboratory
B) Voyager 1
C) Cassini
D) Hubble Space Telescope

2. What is the primary function of the AI-driven 'AutoNav' system used on the Mars Perseverance rover?

A) Regulating oxygen levels
B) Autonomous path planning and hazard avoidance
C) Interplanetary communication encryption
D) Measuring atmospheric pressure

3. The Kepler Space Telescope utilized an AI algorithm based on neural networks to identify what specific feature in distant light curves?

A) Dark matter
B) Exoplanets
C) Comet tails
D) Solar flares

4. What is the name of the AI tool developed by NASA to identify potential impact craters on planetary surfaces from satellite imagery?

A) CraterGAN
B) DeepImpact
C) MarsNet
D) AstroMapping

5. In 2020, how did artificial intelligence assist researchers studying the 'Great Red Spot' on Jupiter?

A) By physically steering the probe
B) By predicting its shrinkage rate using historical data
C) By generating fuel for the probe
D) By mining its chemical composition

6. AI algorithms on the James Webb Space Telescope are used primarily for which process during data acquisition?

A) Fuel combustion
B) Targeting and precision pointing
C) Translating alien languages
D) Predicting solar eclipses

7. What role does AI play in the 'SETI' (Search for Extraterrestrial Intelligence) project regarding radio signals?

A) Designing rocket thrusters
B) Filtering terrestrial noise to detect potential technological patterns
C) Building physical space antennae
D) Calculating the mass of black holes

8. The 'Ionospheric Connection Explorer' (ICON) uses AI to study which complex relationship?

A) The birth of stars
B) The interaction between Earth's weather and space weather
C) The orbit of Pluto
D) The surface texture of Mercury

9. AI is used in the 'Mars Reconnaissance Orbiter' to perform which task efficiently?

A) Compressing massive image files for transmission to Earth
B) Growing plants in space
C) Repairing solar panels
D) Navigating to Venus

10. Which company partnered with NASA to use AI to discover a second planet in the Kepler-90 solar system, making it the first system known to have as many planets as our own?

A) SpaceX
B) Google
C) Blue Origin
D) Virgin Galactic

11. What specific data challenge does AI address for the 'Transiting Exoplanet Survey Satellite' (TESS)?

A) Managing mission budgets
B) Classifying millions of stars for potential transit events
C) Cleaning the telescope lens
D) Avoiding space debris

12. AI-based machine learning is currently used by NASA to predict what space-weather phenomenon that can damage satellites?

A) Solar flares
B) Lunar phases
C) Asteroid rotation
D) Meteorite impacts

13. What is the benefit of using AI 'on-board' processing for deep space probes like the Earth Observing-1?

A) It eliminates the need for solar panels
B) It allows for autonomous decision-making without waiting for ground control commands
C) It creates new elements
D) It powers the radio transmitter

14. AI models are used to map the 'Cosmic Web' by analyzing data from which type of space observations?

A) Galaxy distributions and redshift surveys
B) Deep-sea diving
C) Seismic activity on Earth
D) Radio waves from the Moon

15. How do researchers use AI to distinguish between asteroids and 'false positives' in data from the NEOWISE mission?

A) By manually drawing pictures
B) By using pattern recognition to identify moving objects against stationary stars
C) By weighing the asteroids
D) By measuring the temperature of the spacecraft

16. The AI system 'Virtual Meteor Observatory' uses computer vision to track what in the night sky?

A) Space stations
B) Meteors
C) Satellites
D) Planetary orbits

17. Which astronomical concept is assisted by AI by 'de-blurring' and enhancing images from ground-based telescopes affected by atmospheric turbulence?

A) Adaptive optics
B) Rocket propulsion
C) Nuclear fusion
D) Quantum entanglement

18. What does the AI program 'Planet Hunters' incentivize to confirm the discovery of exoplanets?

A) Crowdsourced human analysis combined with machine learning verification

B) The manual creation of star charts

C) Sending robots to the planet

D) Building larger telescopes