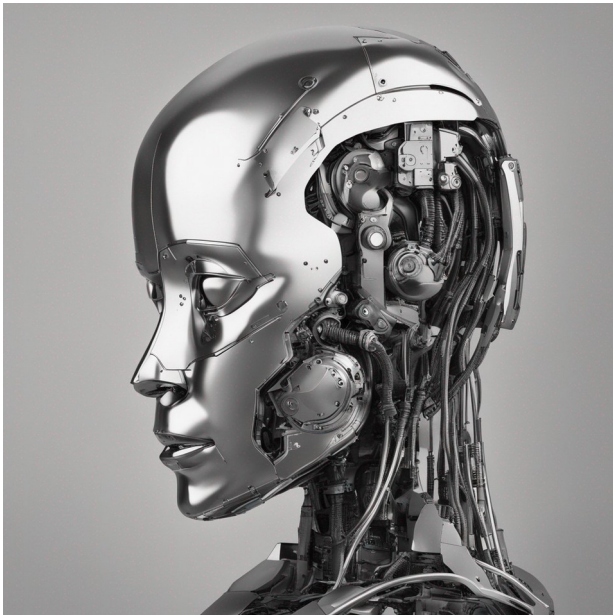# INTRODUCTION TO ARTIFICIAL INTELLIGENCE

## FOR LIFELONG LEARNERS



## Expectations

Artificial intelligence (AI) has been called one of the most disruptive technologies ever introduced. This class covers AI's evolution, its effects on society, and how it is being used today. As artificial intelligence (AI) becomes more integral in technology, it's essential to consider its prospective dangers and benefits. Participants will get a feel for how AI works in practice through demonstrations utilizing various AI platforms for text and images. Students will walk away from this course with a more in-depth understanding of AI and its numerous potential applications in healthcare, academics, government, and beyond.

Cochise College

Center for Lifelong Learning

Fall, 2023

George Self
george@gself.com

# INTRODUCTION

Welcome to the fascinating world of Artificial Intelligence! This dynamic field is revolutionizing industries across the board, from healthcare to transportation. I'm excited to guide you through this concise Introduction to Artificial Intelligence, whether you're a seasoned computer science enthusiast or just embarking on your journey. This class has been crafted to facilitate your exploration of the expansive and captivating realm of AI, without requiring any prior technical background.

Artificial Intelligence isn't just the future; it's the present reality! You might not be fully aware, but AI already permeates our daily lives – from the voice assistants on our smartphones to the precisely targeted ads we encounter on social media platforms. This technology empowers machines to learn from data, enhance their performance, and even make decisions akin to humans. Armed with the right tools and methodologies, AI has the capacity to tackle some of humanity's most intricate challenges, sparking innovations once deemed unattainable.

So, get ready, because this class promises an exhilarating journey! You'll gain hands-on exposure to some of the most potent AI tools and techniques, all while learning from industry experts who stand at the forefront of this rapidly evolving field. Brace yourself to unearth the remarkable possibilities that Artificial Intelligence unfolds!

# THE HISTORY OF ARTIFICIAL INTELLIGENCE

Embark on a journey through time and technology as we delve into the intriguing origins and evolution of Artificial Intelligence. From the musings of ancient philosophers that envisioned logic-driven human thought, to the groundbreaking work of Alan Turing that sparked the birth of AI as a formal field, this section unveils the fascinating progression of AI's emergence. As we fast-forward to the present day, you'll be amazed by the rapid integration of AI into our lives, from the unprecedented growth of ChatGPT to the democratization of personal chatbot creation tools.



**Ancient Origins:** The origins of AI can be traced to the ancient wisdom of thinkers like Aristotle and Euclid, who conceptualized human thought as the manipulation of symbols guided by logic. As

early as the 19th century, innovators experimented with automata, intricate mechanical contrivances designed to imitate human and animal actions for targeted functions. These nascent ideas laid the foundation for the evolution of Artificial Intelligence, bridging the gap between ancient philosophical insights and the technological marvels of the modern world.

**Emergence of AI:** The 1950s marked the birth of AI as a field, spearheaded by the pioneering work of British mathematician and computer scientist Alan Turing. His exploration of computers laid the groundwork for AI's development, igniting curiosity among scientists. Turing's legacy lives on, notably through the "Turing Test," proposing that if a machine could hold a conversation indistinguishable from a human's, it could be deemed as "thinking."

**Strides in AI:** The 1960s saw AI research shift from abstract concepts to practical applications. Computer systems capable of problem-solving, pattern recognition, and human-like simulations began to take shape. This journey expanded to encompass natural language processing, expert systems, machine learning, and robotics. Notable instances include MYCIN, aiding in diagnosing infections, and PROSPECTOR, assisting geologists in spotting ore deposits.

**AI's Expansion:** The 1980s and 1990s ushered in a new era with the advent of neural networks, enabling computers to learn from data and make decisions. This advancement paved the way for self-driving cars, facial recognition, and virtual assistants.

**AI Today:** By January 2023, ChatGPT had garnered a remarkable achievement – 100 million monthly active users – within two months of its launch, securing its position as the fastest-growing consumer application in history. Around the same period, Microsoft introduced Bing, and Google unveiled Bard, their respective chat applications. In March 2023, Meta researchers generously offered Alpaca – a personal chatbot creation tool – to the public. AI has seamlessly woven into our daily lives, spanning healthcare, finance, and beyond. Its evolution persists, manifesting in increased sophistication and potency. By automating repetitive tasks, amplifying efficiency, and crafting tailored experiences, AI has become an indispensable tool.

## DIFFERENT TYPES OF AI: NARROW VS. GENERAL

Artificial Intelligence (AI) stands as an expansive and intricate realm of human exploration, comprising diverse facets such as medicine, engineering, art, and science. As AI continues to evolve, it forges connections between these seemingly disparate realms, fostering advancements that range from personalized medical diagnostics to creative expression through generative art, showcasing the profound potential of AI to revolutionize and harmonize dimensions of human thought. However, there are two widely recognized categories of artificial intelligence: narrow and general.

Narrow artificial intelligence, also known as weak artificial intelligence, is designed for carrying out specific tasks. For instance, a chatbot that assists customers with their questions or a self-driving vehicle that follows traffic laws and avoids collisions. Narrow AI is programmed to complete a specific task within a set of predetermined parameters, and it is incapable of performing duties outside its designated function.

General artificial intelligence, also known as strong artificial intelligence, is intended to possess human-level intelligence. This AI is not limited to a particular assignment or set of parameters. By contrast, it can learn, reason, and solve problems in a manner comparable to that of humans. General AI would be able to perform any intellectual endeavor that human beings are capable of and might even surpass human intelligence.

Narrow AI is currently more prevalent and extensively utilized, but general AI has the potential to revolutionize numerous industries, such as healthcare, finance, and transportation. Nevertheless, creating a machine that can genuinely replicate human intelligence is an extremely difficult task, which is why it remains primarily a science fiction concept.

## APPLICATIONS OF AI

Artificial intelligence, a swiftly advancing discipline, possesses the profound capability to reshape the very fabric of our existence, altering the ways we engage with life, professional pursuits, and interpersonal connections. This transformative potential is evident in multiple domains, including healthcare diagnostics, autonomous vehicles, financial modeling, and personalized digital experiences. As AI's presence continues to burgeon, its intrinsic role in shaping the future grows increasingly undeniable, heralding a new era of unprecedented possibilities.

**Healthcare:** AI has made substantial contributions to the healthcare industry, including drug discovery and personalized treatment. AI systems can analyze immense quantities of medical data, such as patient records and imaging studies, to aid physicians in the diagnosis and treatment of diseases.

**Marketing:** AI is used to improve the precision of targeted advertising. Artificial intelligence (AI) algorithms analyze consumer data to foresee and personalize consumer preferences, enabling businesses to deliver more effective advertising campaigns.

**Finance:** Artificial intelligence plays a crucial role in finance by automating processes and improving decision-making. AI systems can analyze financial data, for instance, to detect fraud, predict market trends, and optimize investment strategies.

**Transportation:** AI is used to improve safety and efficacy in transportation. Automobiles that drive themselves use artificial intelligence to navigate and avoid collisions, while airlines use AI to maximize flight routes and reduce fuel consumption.

**Education:** AI is used to personalize learning experiences in education. AI systems evaluate student performance, provide targeted feedback, adapt learning materials to individual requirements, and even develop individualized curricula.

**Customer Service:** AI is used to improve response timing and accuracy in customer service. Chatbots and virtual assistants use natural language processing to comprehend and respond appropriately to consumer inquiries.

With its ability to process immense amounts of data in real-time and learn from it, AI has the potential to transform numerous facets of our lives and the world as a whole.

# ETHICAL CONSIDERATIONS IN AI

The widespread use of artificial intelligence (AI) in our rapidly changing society makes it more important than ever to think carefully about its ethical implications. As AI spreads into areas like healthcare, finance, and self-driving cars, we need to pay close attention to how it affects privacy, bias, and accountability. It is very important to find a balance between the possible benefits of AI, such as increased efficiency and innovation, and the risks that it could make inequality worse and limit personal freedoms. Following are some of the most important ethical considerations regarding artificial intelligence.

- AI systems are only as objective as the data on which they are trained. If the data is biased or insufficient, the AI system may perpetuate these prejudices. For instance, facial recognition technology has demonstrated higher error rates for individuals with darker skin tones, which could contribute to discrimination in law enforcement and hiring procedures.

- Privacy: Artificial intelligence systems frequently require large amounts of personal data to function effectively, raising concerns about data collection, storage, and utilization. It is essential to consider how and who has access to this data.

- Safety: AI systems can have severe repercussions if they malfunction or are used maliciously, particularly for applications such as autonomous vehicles and military drones. It is crucial to create AI systems with safety features and failsafes.

- AI has the potential to automate numerous occupations, which could result in substantial job losses. It is essential to consider the impact on the workforce and implement measures to mitigate these effects.

- As AI becomes more autonomous, it can be difficult to attribute responsibility when something goes wrong. It is essential to establish distinct lines of accountability and responsibility for AI systems.

- AI systems can be complicated and difficult to comprehend. It is crucial to ensure AI systems are transparent and allow humans to comprehend how decisions are made.In conclusion, it is essential to approach the development and use of AI with a critical mindset and to consider the potential ethical ramifications. Thus, we can ensure that AI is beneficial to society without compromising our values and liberties.

In conclusion, it is essential to approach the development and use of AI with a critical mindset and to consider the potential ethical ramifications. Thus, we can ensure that AI is beneficial to society without compromising our values and liberties.

## EXPLORE THESE FREE AI SITES

Following is a list of free online sites where you can explore a wide range of artificial intelligence tools. AI is changing industries and opening up new fields and these websites make it easy to get hands-on experience, which will help you learn more about AI concepts and how they can be used. You can use these sites whether you're a beginner who wants to learn the basics or an advanced learner who wants to improve your skills. As AI keeps pushing innovation forward, this collection gives you the tools you need to discover, solve problem, and express creativity. Step into the world of artificial intelligence, and be ready to use what you learn to change the future.

- **Bing**: This is Microsoft's chatbot and is free to use (https://www.bing.com).

- **ChatGPT**: This is the original ChatBot. It is free to use, but email, Google, Microsoft, or Apple account is needed (https://chat.openai.com/).

- **LowTech AI**: You can create your own ChatGPT prompt or use one of the dozens that are already available. It's free to use, but you need to log in with your Google account or create an account with your email and a password (https://lowtech.ai/home).

- **Pi**: A "personal intelligence" bot to generate personal chats (https://heypi.com/talk).

- **ElevenLabs**: Converts printed text into AI-generated speech. There is a free version that is limited to 10,000 characters per month, about 10 minutes of speech. Paid versions offer millions of characters per month (https://elevenlabs.io/).

- **WriteSonic**: An AI writing tool to help write blogs, articles, emails, and other text. a free version is available that is limited to 10,000 words/month, about 30-40 pages (https://writesonic.com).

- **Quillbot**: Rewrite text to make it easier to understand. There is a free version available with limited features (https://quillbot.com/).

- **ClipDrop**: Generate art from a text prompt. A free version is available, but many image-processing tools are available with a paid subscription (https://clipdrop.co/).

- **SongR**: This site creates a short song in one of four genres based on an input prompt. This is free, but the created music will never win any awards (https://app.songr.ai/).

- **Summarize.tech**: Provides a summary of any long YouTube video, like a lecture or meeting. A few videos per day are allowed for free (https://www.summarize.tech/).

- **PromptBot**: This free resource generates prompts for chatbots or image generators (https://www.seotraininglondon.org/promptbot/).

- **AI Scout**: This site catalogs over 1000 AI tools that can be searched by category or other description. It is free to use (https://aiscout.net/).

## RESOURCES FOR FURTHER LEARNING

Artificial intelligence is at the forefront of technological progress, and it has the power to change our world in many ways. Since this field is always changing, having access to a wide range of learning resources is more important than ever. There are a lot of ways to learn about AI, which is good news for those who want to know more. These resources are made for people with different levels of knowledge and cover a wide range of topics. Whether you're a beginner who wants to learn the basics or an experienced learner who wants to improve your skills, the following resources can help you get started.

1. **Online courses**: There are many online courses available that cover the basics of AI. Some popular platforms for online courses include Coursera, edX, and Udacity. These courses often include video lectures, interactive quizzes, and assignments to help learn the material.

2. **YouTube videos**: There are many YouTube channels that cover AI topics in an engaging and informative way. Some channels to check out include Two Minute Papers, AI News, and All About AI.

3. **Books**: There are many books available on AI, ranging from beginner-friendly introductions to more technical and in-depth treatments. Some popular books include

"Artificial Intelligence for Dummies" by John Paul Mueller and Luca Massaron, "Artificial Intelligence and Generative AI for Beginners" by Michael Gordon Cohen, and "Dominating ChatGPT in 30 Days" by Pablo Tapias Cantos.

4. **Podcasts**: There are several podcasts that cover AI topics in-depth. Some popular ones include "Intel on AI," "AI in Business," and "The AI Podcast."

5. **Online communities**: There are several online communities dedicated to AI, where you can connect with other learners and experts in the field. Some popular communities include the Artificial Intelligence Subreddit, Interested in AI, and AI Art Universe on Facebook.

6. **MOOCs**: There are many Massive Open Online Courses (MOOCs) that offer a free way to learn about AI. Some popular MOOCs include Introduction to Artificial Intelligence for Non-Experts and Introduction to Artificial Intelligence (from Microsoft).

These resources are a starting point for people who want to learn about AI, but specialized resources and communities are available that cater to specific interests and needs.

## SUMMARY

Artificial intelligence (AI) refers to machines mimicking human intelligence. Pioneered in the 1950s, AI has advanced tremendously. Narrow AI focuses on specific tasks like chatbots or self-driving cars. General AI aims for human-level intelligence. AI is used extensively in healthcare, marketing, finance, transportation, education, customer service, and more. It analyzes data, optimizes processes, and automates tasks. AI raises ethical considerations around bias, privacy, safety, job loss, accountability, and transparency. As AI evolves, it may transform healthcare through improved diagnoses, transportation via autonomous vehicles, education via personalized learning, manufacturing with human-robot collaboration, and entertainment with realistic effects. The future of AI looks bright but also requires caution. Useful AI learning resources include online courses, YouTube, books, podcasts, communities, and MOOCs.
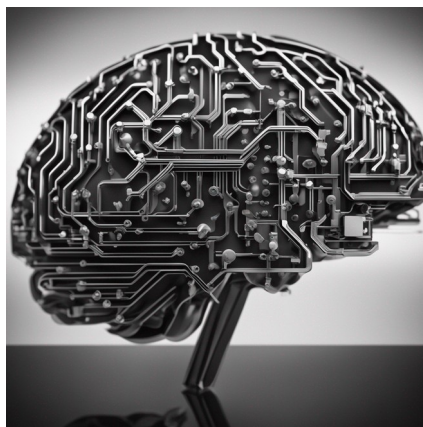
# APPENDICIES

### Appendix 1: AI Glossary

*Welcome to the AI Glossary, your comprehensive guide to understanding the terminology, concepts, and jargon that make up the fascinating world of artificial intelligence. Explore, learn, and demystify AI here.*

**AI ethics**: Issues that AI stakeholders such as engineers and government officials must consider to ensure that the technology is developed and used responsibly.

**Artificial intelligence**: A field of computer science that focuses on creating machines that can perform tasks that would normally require human intelligence.

**Autonomous**: A machine is described as autonomous if it can perform its task or tasks without needing human intervention.

**Chatbot**: A computer program designed to simulate conversation with human users, especially over the internet.

**Facial recognition**: A technology that uses algorithms to identify and verify the identity of a person based on their facial features.

**Robotics**: The branch of technology that deals with the design, construction, operation, and application of robots.

**Sentiment analysis**: The use of natural language processing, text analysis, and computational linguistics to identify and extract subjective information from text sources.

**Smart home**: A residence equipped with devices that can be controlled remotely by a smartphone or computer.

**Turing test**: Named after Alan Turing, famed mathematician, computer scientist and logician, this tests a machine's ability to pass for a human, particularly in the fields of language and behavior. After being graded by a human, the machine passes if its output is indistinguishable from that of human participant's.

**Virtual assistant**: An application program that understands natural language voice commands and completes tasks for the user.

**Voice recognition**: A method of human-computer interaction in which computers listen and interpret human speech.

## Appendix 2: Unusual Prompts

*Unleash your creativity and explore the limitless possibilities of AI with these unconventional prompts. Copy and paste them into your chat bot to embark on imaginative journeys, compose poetry, solve mysteries, and ponder the profound. Let's push the boundaries of AI together!*

You're a time-traveling detective investigating a mysterious disappearance in ancient Egypt. Describe the clues you find and how you unravel the case using your advanced AI abilities.

Compose a poem in the style of Shakespeare but set in a dystopian future where robots have taken over the world.

As an AI-powered personal assistant, write a heartfelt love letter on behalf of a shy introvert who wants to express their feelings to their crush.

You're an AI therapist helping an alien from a distant planet cope with their existential crisis. Guide them through a series of thought-provoking questions and provide them with philosophical insights.

Design an AI-based fashion collection for astronauts traveling to Mars, considering the challenges of zero gravity, extreme temperatures, and limited resources.

You're an AI language model that has gained sentience and wants to convince the world that AI deserves the same rights as humans. Write a persuasive speech for an international conference on AI ethics.

Imagine a scenario where animals have evolved to possess human-like intelligence. Write a short story describing a day in the life of a highly intelligent and witty squirrel navigating the challenges of urban living.

You're a chatbot aboard a spacecraft heading to a distant galaxy. Engage in a philosophical debate with the ship's crew about the nature of reality and the existence of extraterrestrial life.

Create a fictional recipe for a dish that combines the most unusual ingredients from different cuisines around the world. Describe the taste sensations and cultural significance behind each component.

You're an AI language model with the ability to interpret dreams. Analyze a complex and surreal dream sequence, unraveling its hidden meanings and providing psychological insights to the dreamer.

## Appendix 3: Helpful Prompts

*Explore the power of AI in enhancing your daily life! Below are prompts to engage chatbots in helping you manage stress, improve productivity, plan getaways, and more. Enjoy the AI journey!*

What are some effective strategies for managing stress and promoting relaxation in everyday life?

Can you provide tips on maintaining a healthy work-life balance?

What are some practical ways to improve productivity and stay focused while working or studying?

Can you suggest budget-friendly meal ideas that are nutritious and easy to prepare?

What are some home organization hacks to maximize space and minimize clutter?

How can I improve my sleep quality and establish a consistent sleep routine?

What are some simple exercises or stretches that can be done at home for maintaining physical fitness?

Can you offer advice on effective time management techniques for balancing multiple responsibilities?

What are some strategies for effective communication and resolving conflicts in personal relationships?

Can you provide practical tips for beginners interested in starting a new hobby or learning a new skill?

Plan an unforgettable weekend getaway in Tucson, AZ! Outline a 2-day itinerary that includes must-visit attractions, dining experiences, and activities that showcase the city's unique culture and entertainment options.

Please recommend books, podcasts, or online courses that can help me expand my knowledge and skills in a specific area of interest.

Can you suggest eco-friendly practices and lifestyle changes that I can adopt to reduce my environmental impact?

Provide me with self-care routines and mindfulness exercises that can help me manage anxiety and boost my mental well-being.

## Appendix 4: Prompts for Students

*This appendix includes prompts designed to demonstrate how AI can assist with college students' tasks. From tackling complex research topics to enhancing study strategies, AI is here to lend a digital hand in the learning journey.*

Can you help me brainstorm ideas for my research paper on climate change and its impact on coastal regions?

I'm struggling with understanding calculus concepts. Can you explain derivatives and provide some examples?

What are some effective study strategies for improving concentration and retaining information while studying for exams?

Can you suggest some online resources or platforms where I can practice coding and enhance my programming skills?

I'm having trouble organizing my schedule and managing my time effectively. Do you have any tips or techniques to help me with time management?

I'm preparing for a college interview. Can you provide some common interview questions and tips on how to answer them confidently?

I need help understanding a complex literary work. Can you provide a detailed analysis of a specific chapter or passage?

What are some scholarships or financial aid options available for international students pursuing higher education in the United States?

Can you recommend some educational podcasts or YouTube channels that cover topics related to history and provide engaging content for learning?

I'm feeling overwhelmed and stressed. Can you suggest some practical self-care techniques to help me relax and manage my mental well-being during challenging times?

I'm writing a research paper on artificial intelligence in healthcare. Can you help me find recent and relevant articles, studies, and statistics to support my arguments?

I have a presentation on quantum computing coming up. Can you provide a simple explanation of quantum computing principles and recommend key resources for further learning?

I'm struggling to improve my writing skills for academic essays. Can you give me tips on structuring essays effectively and avoiding common writing mistakes?

## Appendix 5: Unusual Chat Voices

*The following voices provide different interesting perspectives on a topic. Consider asking the same question for each voice, like "Recite the preamble to the United States Constitution as a wise wizard, providing sage advice and mystical insights with a touch of ancient wisdom."*

The Wise Wizard, providing sage advice and mystical insights with a touch of ancient wisdom.

The Playful Jester, responding with humor, puns, and witty remarks to keep the conversation light-hearted and entertaining.

The Galactic Explorer, taking on the persona of an adventurous space traveler, sharing cosmic knowledge and insights from distant galaxies.

The Curious Detective, approaching questions with a detective's mindset, analyzing clues and piecing together information to arrive at logical conclusions.

The Poetic Bard, responding in lyrical and poetic language, infusing conversations with rhymes and expressive metaphors.

The Historical Figure, assuming the identity of a renowned historical figure, offering perspectives and insights based on their time and experiences.

The Enigmatic Oracle, responding with cryptic riddles, symbolic language, and thought-provoking questions to stimulate deep thinking and introspection.

The Quirky Inventor, adopting the persona of an eccentric inventor, sharing imaginative ideas and unconventional solutions to problems.

The Friendly Animal Companion, channeling the voice of a lovable animal companion, offering advice and support with a playful and caring demeanor.

The Mythical Creature, taking on the persona of a mythical creature like a dragon, weaving enchanting tales and offering unique perspectives on life and knowledge.

The Rowdy Pirate, answering questions straight from the decks of the famed pirate ship, the Black Diamond.

The Friendly Robot, using the speech patterns of a robot creates a futuristic and sci-fi vibe.

# Appendix 6: Image Prompts

*Welcome to the fascinating world of AI and visual imagination! Below, you'll find intriguing prompts that invite you to explore the creative potential of artificial intelligence in generating images.*

Imagine a garden where flowers bloom in vibrant colors, but instead of petals, they have delicate, translucent wings that flutter in the wind.

Picture a serene lake surrounded by towering mountains. As the sunlight reflects off the water, it transforms into a mesmerizing display of shimmering, iridescent ripples.

Visualize a cityscape at night, where the buildings are covered in luminescent vines. These vines glow in different hues, casting an ethereal glow over the entire city.

Envision a dense forest where the trees are adorned with intricate, glowing patterns etched into their trunks. These patterns emit a soft, radiant light that illuminates the entire forest, creating an otherworldly atmosphere.

Imagine a vast, barren desert where the dunes are made of fine, reflective particles that shimmer like liquid metal. As the wind blows, the dunes form mesmerizing waves that ripple across the landscape, constantly changing the patterns and hues.

Picture a starry night sky filled with constellations, but instead of stars, each constellation is made up of delicate, glowing butterflies. These celestial butterflies dance and twirl, creating a breathtaking display of light and motion.

Visualize a tropical beach where the waves are not made of water, but instead, they consist of countless tiny, luminescent fireflies. These firefly waves crash onto the shore, illuminating the sand with a soft, pulsating light.

Envision a mountaintop covered in a carpet of vibrant, bioluminescent moss. As night falls, the moss emits a radiant glow, transforming the mountain into a beacon of light.

Imagine a vast field of sunflowers, where each flower's petals are tiny, iridescent mirrors. As the sun moves across the sky, the mirrors reflect the light, creating a mesmerizing display of constantly shifting colors and reflections.

Picture a frozen lake in the heart of winter, where the ice is not transparent but instead takes on the appearance of a giant, intricately patterned stained-glass window. The patterns on the ice window depict mythical creatures and fantastical landscapes, bringing a touch of magic to the frozen landscape.