



Introduction to Quantum Artificial Intelligence:

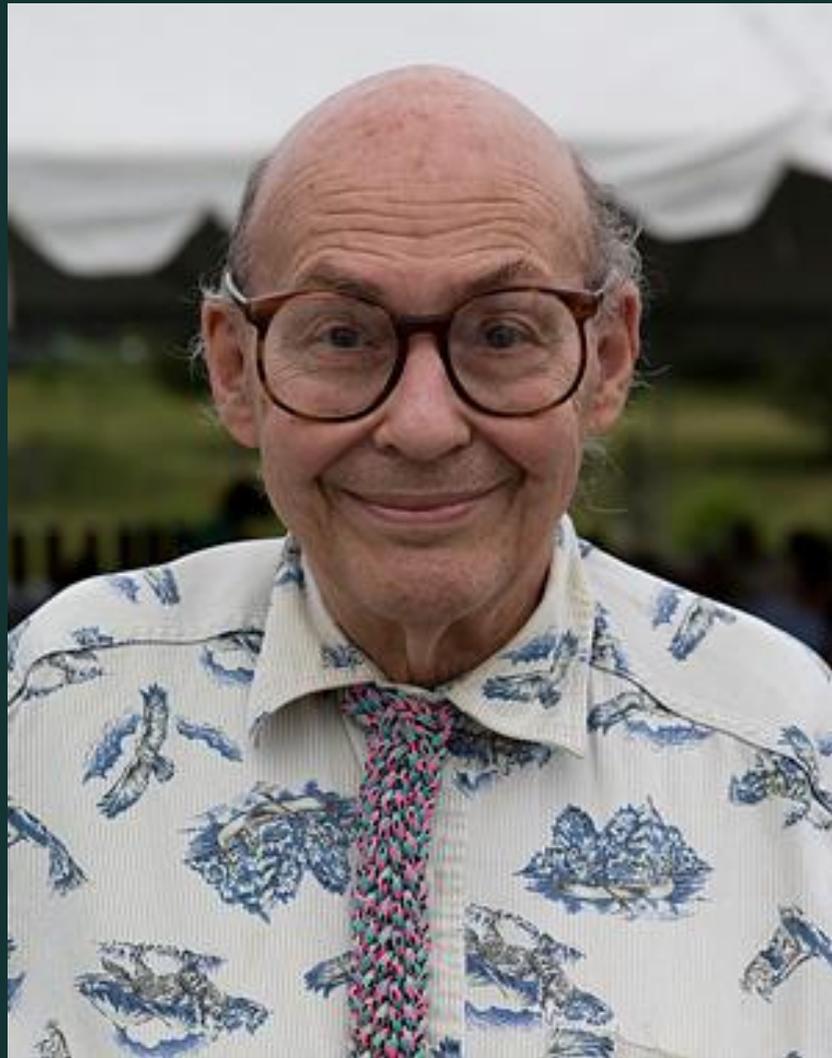
The Future of AI and Quantum Computing: Transforming Our Lives

Welcome to an exciting exploration of how artificial intelligence and quantum computing are shaping our future. In this presentation, we'll delve into the latest breakthroughs, potential applications, and the profound impact these technologies will have on our lives. From revolutionizing healthcare to unlocking the mysteries of the universe, we're on the brink of a new era in human history.

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March 3rd, 2026



Part 1 Overview: AI Progress and Breakthroughs Over the Past 60+ Years

1

Neural Networks

Early AI systems inspired by the human brain's structure and function.

2

Deep Learning

Advanced neural networks capable of processing complex data patterns.

3

Natural Language Processing & Multi-Modal Systems

AI systems that can understand, interpret, and generate human language and expressions with remarkable accuracy.

“Inspired by mathematical work on logic and computation, Minsky believed that the human mind was fundamentally no different than a computer, and he chose to focus on engineering intelligent machines, first at Lincoln Lab, and then later as a professor at MIT, where he cofounded the Artificial Intelligence Lab in 1959 with another pioneer of the field, John McCarthy.”

MIT Technology Review (1/26/2016)

Part 1 Overview: Quantum Progress Over the Past 45+ Years



*Physics of Computation Conference at MIT's Endicott House, where Professor Richard Feynman Launched Quantum Computing:
and inspired my career in Quantum*



The Power of Classical and Quantum AI in Our World

Data

Generated daily worldwide, various languages, cultures and applications fueling AI and machine learning advancements.

Neurons

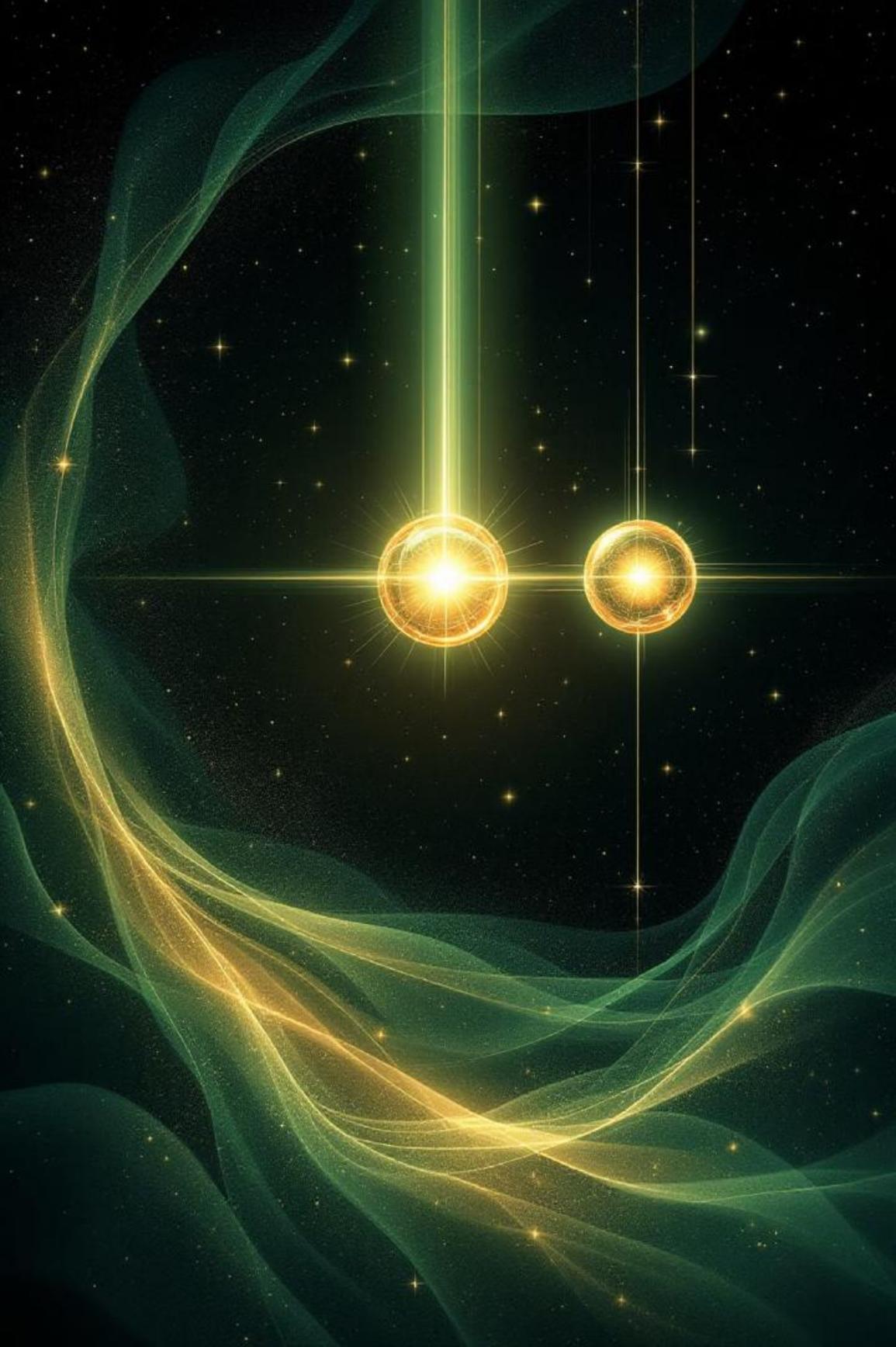
Biological structures and processes in the human brain, inspiring us and machines to generate complex Classical and Quantum AI architectures.

Computation

Potential processing power of future quantum computers.

The scale, reach and natural examples of data, biological complexity, and computational power driving technological progress.

This presentation separates the hype in the media to what's currently in the works.



Relativity and Quantum Revolution Explored

Wave-Particle Duality

Photoelectric effect
revealed the dual nature of light, behaving as both a wave and a particle.

Quantum Entanglement

“Spooky action at a distance” describes particles that remain connected regardless of separation.

Uncertainty Principle

Heisenberg's uncertainty principle in quantum mechanics shows limits on what can be known, in contrast to the determinism of Newtonian mechanics

Discovered over 100 years ago, relevance to humanity increasing with technological advances. https://en.wikipedia.org/wiki/History_of_quantum_mechanics



Building the Universe with Equations

Fundamental Forces

Gravity, electromagnetism, strong and weak nuclear forces described by elegant mathematical equations.

Quantum Field Theory

Complex mathematical framework describing the behavior of subatomic particles and their interactions.

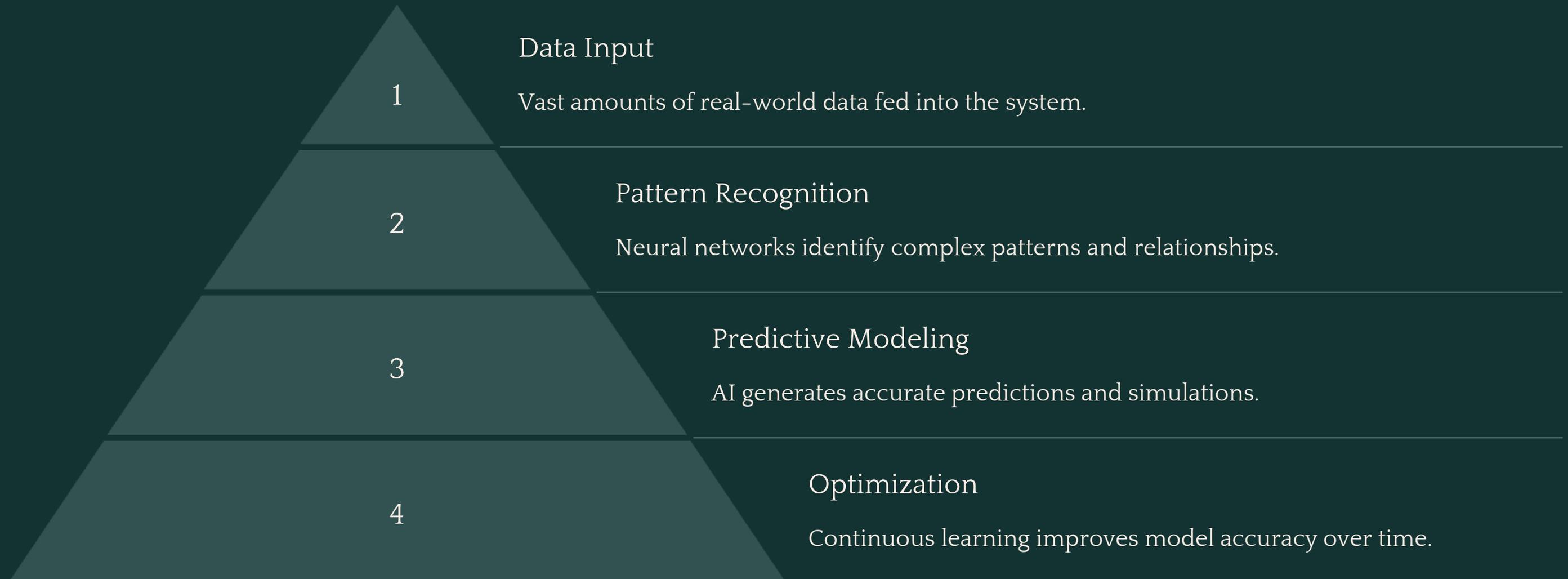
String Theory

Ambitious attempt to unify all forces and particles using vibrating strings in multiple dimensions.

Cosmological Models

Equations describing the evolution and structure of the universe from the Big Bang to the present day.

Revolutionizing Computer Modeling Using Neural Networks



Common AI terms:

Inductive and Deductive reasoning, Supervised and Unsupervised Learning, Reinforcement Learning with Human Feedback, etc.

Benefiting Humanity Example: Advanced Diagnostics for Longer Life

1

Quantum AI-Powered Imaging

Machine learning algorithms analyze medical images with unprecedented accuracy, detecting early signs of disease.

2

Genetic Screening

Advanced DNA sequencing and analysis identify genetic predispositions to diseases, enabling preventive measures.

3

Wearable Health Monitors

Continuous health tracking devices provide real-time data for early intervention and personalized health management.





The Intersection of Quantum AI and Brain Imaging



Enhanced Diagnosis

AI analyzes brain scans to detect anomalies and assist in early diagnosis of neurological disorders.



Research Acceleration

Machine learning algorithms process vast amounts of imaging data to uncover new insights into brain function.



Personalized Treatment

AI-powered systems help tailor treatment plans based on individual brain structure and activity patterns.



Superpowers from Quantum Mechanics

1

Quantum Tunneling

Particles can pass through barriers impossible to model in classical physics, enabling advanced electronics and potentially new forms of transportation.

2

Superposition

Quantum bits exist in multiple states simultaneously, exponentially increasing computing power for complex problem-solving.

3

Quantum Entanglement

Instantaneous communication between entangled particles, potentially revolutionizing secure communications and teleportation.

The power of the hybrid unification of Classical and Quantum Artificial Intelligence is being recognized.

<https://www.forbes.com/sites/jonathanreichental/2023/11/20/quantum-artificial-intelligence-is-closer-than-you-think/>



The Future of Clinical Trials

1

Virtual Trials

Participants can join studies remotely, increasing diversity and accessibility.

2

Quantum AI-Driven Patient Matching

Advanced algorithms identify ideal candidates for trials, improving success rates.

3

Real-Time Data Analysis

Continuous monitoring and adaptive trial designs based on incoming data.

4

Data Integrity & Privacy

Secure, transparent record-keeping ensures data reliability and patient privacy.



The Race to Build Quantum Computers

1

2019: Quantum Supremacy

Google claims to achieve quantum supremacy, performing a calculation in 200 seconds that would take a classical supercomputer 10,000 years.

2

2021: Error Correction

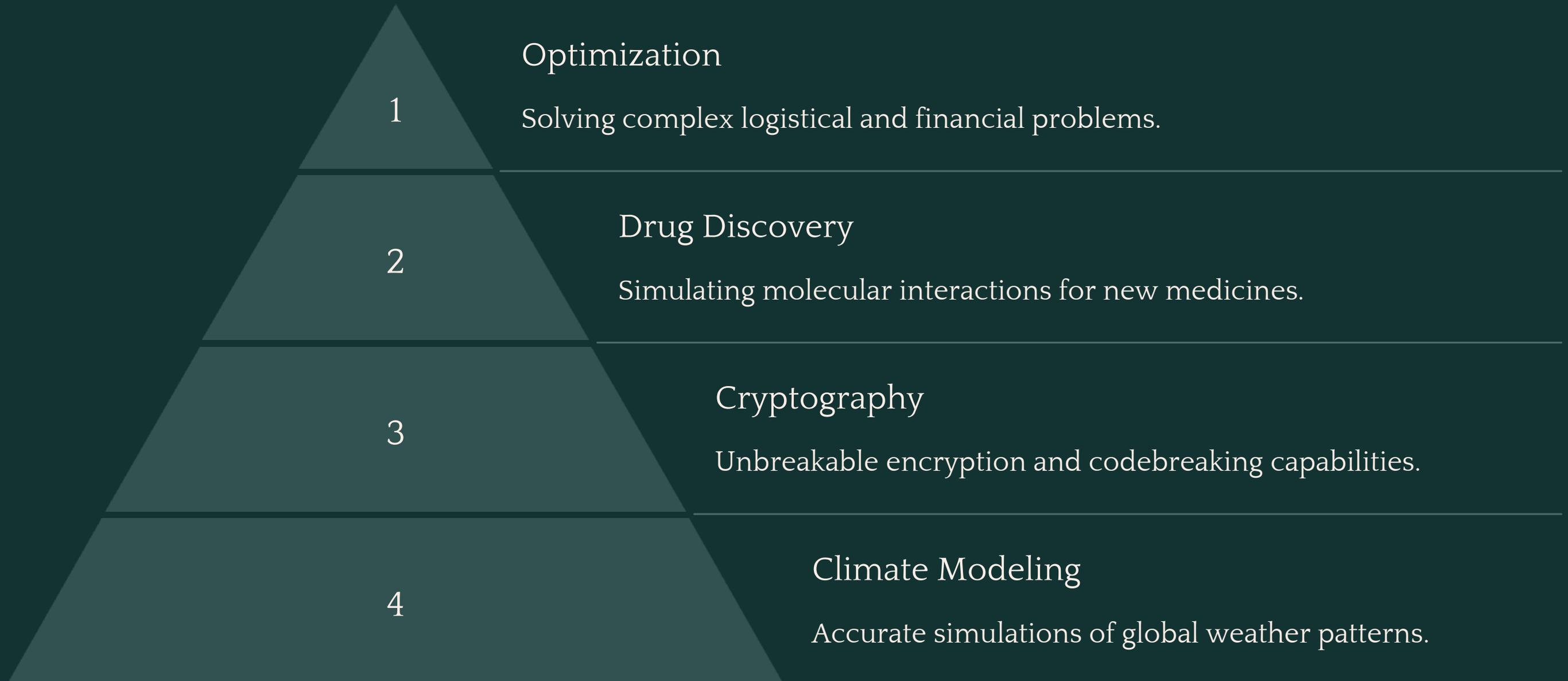
Researchers make significant progress in quantum error correction, a crucial step for practical quantum computing.

3

2023: Scaling Up

Companies like IBM and Google continue to increase the number of qubits in their systems, aiming for more powerful and stable quantum computers.

The Future of Quantum Computing



Information: The Building Block of Life

Genetic Code

DNA stores and transmits the information needed to build and maintain living organisms.

Neural Networks

The brain processes and stores information through complex networks of neurons.

Quantum Information

At the smallest scales, information is encoded in the quantum states of particles.

Digital Revolution

Modern technology has exponentially increased our ability to store, process, and transmit information.



Part 2:

Applications You Will Begin to See Everyday

The Impact of Quantum AI on Education

Personalized Learning

AI-powered systems adapt to individual student needs, providing customized lesson plans and pacing.

Intelligent Tutoring

Virtual tutors available 24/7, offering immediate feedback and support in various subjects.

Administrative Efficiency

AI streamlines administrative tasks, allowing educators to focus more on teaching and mentoring.

Rethinking Drug Development Time and Cost

Traditional Approach

- Drug development typically takes 10-15 years and costs billions of dollars, with high failure rates in clinical trials.

Example Use Case:

- Develop and design a set of plausible medicines and treatment options that can extend the active life-span of a person with a certain disease {X} by {Y} years for an average cost of {Z} dollars which accounts for their individual genetic makeup and other unique factors (-2002 – using genetic programming and optimization)

Quantum AI-Powered Innovation

- Machine learning algorithms analyze vast chemical libraries and biological data to identify promising drug candidates faster and more accurately.
- Virtual screening and trials reduce costs and accelerate the process.



Quantum Computing in Drug Discovery

1

Molecular Simulation

Quantum computers model complex molecular interactions, accelerating the identification of potential drug candidates.

2

Protein Folding

Advanced algorithms solve protein folding problems, crucial for understanding diseases and developing treatments.

3

Personalized Medicine

Quantum-powered analysis of genetic data enables tailored treatments for individual patients.

Classical and Quantum AI in Financial Services

1

Risk Analysis

Algorithms process vast amounts of data to assess market risks in real-time.

2

Portfolio Optimization

Computers find optimal investment strategies by analyzing countless scenarios simultaneously.

3

Fraud Detection

Advanced pattern recognition identifies suspicious activities with unprecedented accuracy.





The Ethics of AI and Quantum Computing

Privacy Concerns

As AI and quantum computing process vast amounts of personal data, ensuring privacy becomes increasingly challenging.

Job Displacement

Automation and AI may lead to significant changes in the job market, requiring measures to retrain and support workers.

Algorithmic Bias

AI systems can perpetuate and amplify existing biases if not carefully designed and monitored.

The Future of Transportation

1

Autonomous Vehicles

Self-driving cars and trucks powered by AI, improving safety and efficiency.

2

Hyperloop Systems

Ultra-fast ground transportation using magnetic levitation in low-pressure tubes.

3

Flying Cars

Electric vertical takeoff and landing (eVTOL) vehicles for urban air mobility.

4

Quantum Teleportation

Theoretical instant transportation of information? Potentially leading to new forms of travel.



Quantum AI in Environmental Conservation



Wildlife Monitoring

AI-powered cameras and drones track endangered species and detect poaching activities in real-time.



Waste Management

Smart recycling systems use machine learning to sort and process materials more efficiently.



Climate Modeling

Advanced AI algorithms improve the accuracy of climate change predictions and help develop mitigation strategies.

The Future of Work in the Quantum AI Era

Automation and Augmentation

AI will automate routine tasks while augmenting human capabilities in complex problem-solving and creative work.

New Job Categories

Emerging roles such as AI ethicists, robot counselors, and virtual reality experience designers will reshape the job market.

Continuous Learning

Workers will need to adapt to rapidly changing technology, emphasizing **lifelong learning and skill development**.

Workers who know how to use AI will be more sought after, and those who use Quantum even more so.

Important to teach the next generation to be productive and valuable, especially in critical thinking and knowledge areas.



The Future of Energy with AI and Quantum Computing

Smart Grids

Quantum AI optimizes energy distribution, balancing supply and demand in real-time.

Fusion Reactor Design

Quantum simulations accelerate the development of sustainable fusion energy.

Battery Innovation

Quantum AI and quantum computing: improvements in energy storage technology.

Climate Mitigation

Advanced modeling helps develop strategies to combat climate change.



The Convergence of Quantum AI and Robotics

1

Advanced Perception

AI-powered computer vision and sensor fusion enable robots to understand their environment with human-like accuracy.

2

Adaptive Learning

Robots use machine learning algorithms to improve their performance over time and adapt to new situations.

3

Human-Robot Collaboration

AI facilitates seamless interaction between humans and robots in various settings, from factories to homes.



Quantum Internet: The Next Communication Revolution

Unhackable Communication

Quantum encryption ensures absolute security in data transmission, making interception impossible.

Quantum Teleportation

Secure transfer of quantum information over long distances, potentially revolutionizing global communication.

Distributed Quantum Computing

Linking quantum computers across the globe to create a super-powerful network for solving complex problems.

The Role of Quantum AI in Space Exploration



Autonomous Spacecraft

Quantum AI-powered probes and rovers explore distant planets and moons without human intervention.



Mission Support

Quantum AI assistants help astronauts manage complex tasks and maintain spacecraft systems during long-duration missions.



Data Analysis

Quantum machine learning algorithms process vast amounts of astronomical data to identify new celestial objects and phenomena.





Part 3: Currently Available Tools to use AI today



AI Assistants

Advanced personal assistants that can manage schedules, answer questions, and even predict needs.



Home Automation

Smart homes that learn preferences and optimize energy use, security, and comfort.



Health Monitors

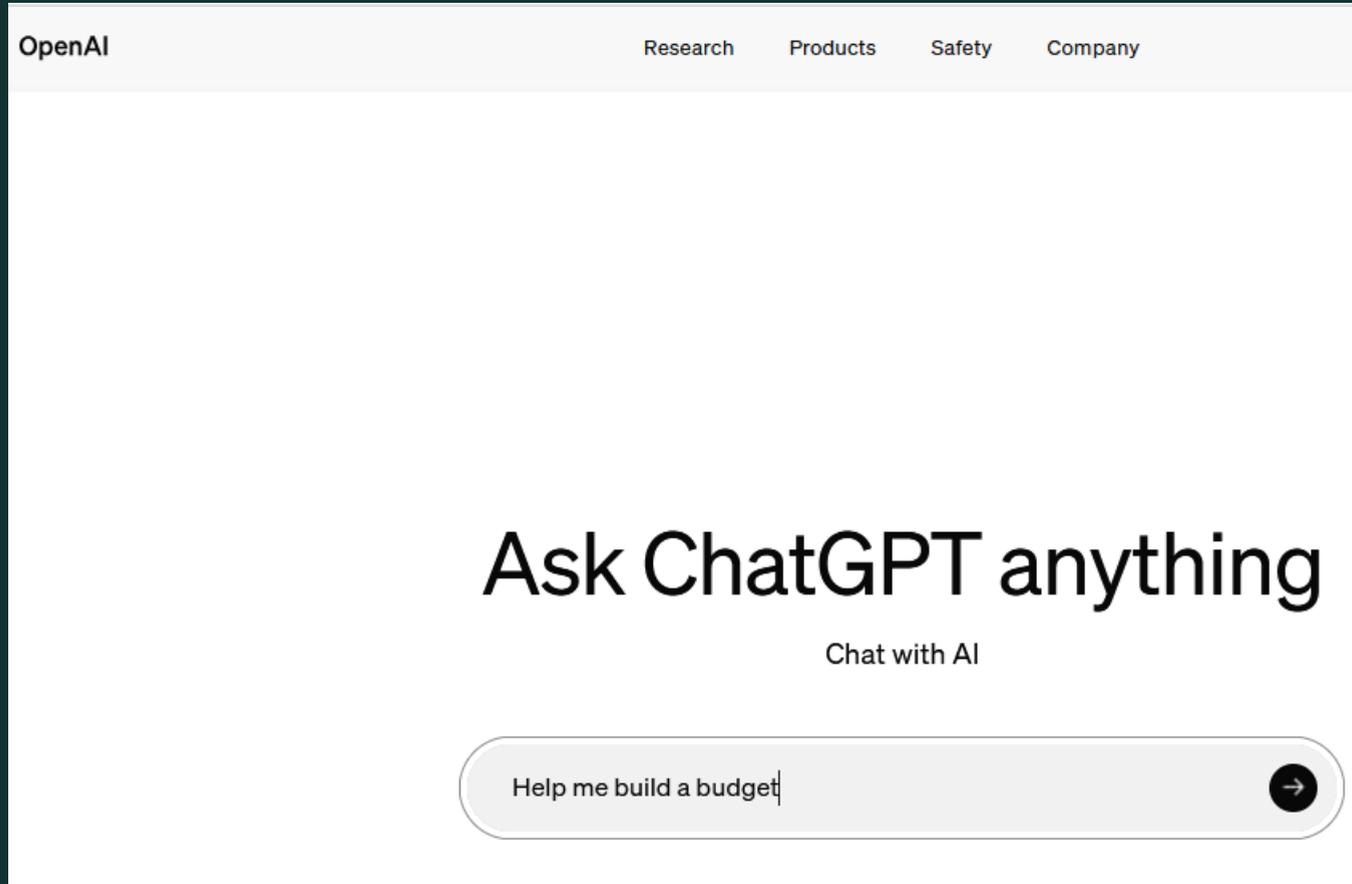
Wearable devices that track vital signs and provide early warning of potential health issues.



Get Started Today!

OpenAI	Perplexity
Anthropic	Gamma
Google Gemini	Grammarly

OpenAI (<https://openai.com/>)



And always check the responses before using them as any of these tools can make mistakes.

A screenshot of a ChatGPT response. The response begins with the OpenAI logo and the text: 'Of course! Let's start by organizing your budget. Here's how we can approach it:'. It is organized into three steps: 'Step 1: Understand Your Financial Picture', 'Step 2: Use a Simple Budgeting Framework', and 'Step 3: Gather Your Numbers'. Each step includes a list of bullet points with questions or advice. At the bottom, there are icons for voice, copy, like, dislike, and refresh, followed by a downward arrow icon. A text input field at the very bottom contains the text 'Message ChatGPT' and an upward arrow icon.

Of course! Let's start by organizing your budget. Here's how we can approach it:

Step 1: Understand Your Financial Picture

- **Income:** What is your monthly income (after taxes)?
- **Expenses:** Do you have fixed monthly expenses (e.g., rent, utilities, insurance)?
- **Savings Goals:** Are you saving for anything specific (e.g., emergency fund, travel, education)?
- **Debts:** Do you have loans or credit card payments?

Step 2: Use a Simple Budgeting Framework

One popular method is the **50/30/20 Rule**:

- **50% Needs:** Essential expenses like rent, groceries, and utilities.
- **30% Wants:** Non-essentials like dining out, entertainment, and hobbies.
- **20% Savings/Debt Repayment:** Emergency fund, retirement, or paying down debts.

Step 3: Gather Your Numbers

Do you already have numbers (like rent, income, or other bills), or should I guide you through identifying these?

Would you like me to create a customizable spreadsheet for you to track your budget, or should we build an example here together?

Message ChatGPT

Anthropic (<https://claude.ai/new>)

Professional Plan

 Good morning, Larry

How can Claude help you today?

Claude 3.5 Sonnet  Choose style 

How should Claude write responses?

Normal  

Concise

Explanatory

Formal

Create & Edit Styles

conversations. [Try it out](#)

Your task is to compose a comprehensive company memo based on the provided key points. The memo should be written in a professional tone, addressing all the relevant information in a clear and concise manner. Use appropriate formatting, such as headings, subheadings, and bullet points, to organize the content effectively. Ensure that the memo is well-structured, coherent, and easy to understand for the intended audience.

Claude 3.5 Sonnet  Choose style  Use **shift + return** for new line

  Use a project 

  Key points

TEXT

NEW Try Google Docs in Chats and Projects 

Connect your Google Docs directly to Claude to provide additional context for your conversations. [Try it out](#)

← Company Memo: Launch of Fit4Success Employee Wellness Program 

MEMORANDUM

DATE: May 15, 2023
TO: All Employees
FROM: Human Resources and Employee Engagement Teams
SUBJECT: Launch of Fit4Success Employee Wellness Program

We are excited to announce the launch of our new comprehensive employee wellness program, Fit4Success, designed to support your physical and mental well-being while enhancing workplace productivity. This memo outlines the key components and benefits of the program, along with enrollment information.

Program Overview

Fit4Success is a holistic wellness initiative that demonstrates our commitment to supporting our employees' health and well-being. The program launches on June 1, 2023, offering a wide range of resources and activities to help you achieve your wellness goals.

Program Components

1. Physical Wellness
 - On-site fitness classes tailored to various fitness levels and preferences
 - Exclusive partnerships with local gyms and wellness centers offering discounted memberships
 - Fitness tracking and goal-setting support
2. Nutritional Support
 - Enhanced healthy meal options in company dining facilities

Last edited just now

https://gemini.google.com/app

Gemini **Advanced** ▾
1.5 Flash

- ◆ Gemini Advanced
- 1.5 Pro
Tackle complex tasks
- 1.5 Flash
Get everyday help
- 1.5 Pro with Deep Research
Get in-depth answers
- 2.0 Flash Experimental
Preview gemini-2.0-flash-exp
- 2.0 Experimental Advanced
Preview gemini-exp-1206

In-depth information in minutes

- 📄 Research websites
- 📊 Analyze results
- 📄 Create report

🖼️ What is this image I just pasted in? ➔



👤 

◆ The image you sent shows **Zavaritski Caldera**.

It's a large volcanic caldera located on **Onkotan Island** in the **Kuril Islands**, Russia.

The distinctive circular shape in the center is the caldera itself, formed by a massive volcanic eruption in the past.

👍 🗨️ 🔄 📄 ⋮



What do you want to know?

I'm entertaining someone from work, they are from India, So I would like to cook them a meal that will help them feel at home in my house. I'm not a master chef or anything like that, but I can do basic cooking. What would you suggest?

Focus Attach

Pro

Global university rankings 2025

Market size of the creator economy

When will the next iPhone be released?

Top cookbooks in 2025

Can use the information provided or click on the source to get more information.

The "Pro" version searches more information to provide answers (common difference between free and pro versions).

I'm entertaining someone from work, they are from India, So I would like to cook them a meal that will help them feel at home in my house. I'm not a master chef or anything like that, but I can do basic cooking. What would you suggest?

Sources

Easy Chicken Tikka Masala - Bowl of Delicious
bowlofdelicious

What can I cook for Indian guests without trying to mimic Indian ...
cooking.stackexcha...

Lockdown Cooking: Indian Recipes for Beginners - My Tasty...
mytastycurry

AC E i ©
Hide sources

Answer

For someone from India, I recommend preparing **Chicken Tikka Masala**, which is an excellent dish for beginners and offers familiar flavors ¹ ⁵ ⁷. This recipe is easy to make and provides a comforting, authentic taste that many Indians enjoy.

Recommended Dish: Chicken Tikka Masala

Why This Is a Great Choice

- Beginner-friendly recipe
- Popular Indian dish that feels like home cooking
- Flavorful and creamy sauce
- Can be paired with simple sides

Basic Recipe Ingredients

- Chicken breast or thigh meat
- Greek yogurt
- Garam masala

Ask follow-up

Pro

Ginger and garlic

8 sources

1. Easy Chicken Tikka Masala - Bowl of Delicious

bowlofdelicious · 1

Chicken Tikka Masala is an easy-to-make, popular Indian recipe that's guaranteed to be healthier (and cheaper!) than at your favorite Indian restaurant without sacrificing taste!

2. What can I cook for Indian guests without trying to mimic Indian ...

cooking.stackexchange · 2

I am raised in Belgium, with the Belgian cuisine related to the French and (to a much lesser extent) the German. I'm having Indian friends over for dinner and I don't know what to cook...

3. Lockdown Cooking: Indian Recipes for Beginners - My Tasty Curry

mytastycurry · 3

Easy to make quick, delicious and healthy, recipes made with common ingredients. My aim is to bring dinner on table in under 30 minutes. Meal preps, menu

4. Best way to learn basic Indian cookery? : r/IndianFood - Reddit

reddit · 4

Best way to learn basic Indian cookery? Hi there! I'm a young Indian man (19) who wants to learn to cook. I've been separated from my family for almost 2 years now due to the...

5. 30-Minute Indian Butter Chicken Recipe - Averie Cooks

averiecooks · 5

https://gamma.app/

Gamma

+ Create new AI

+ New from blank

Import

All

Recently viewed

Created by you

Favorites

Native American and Indigenous Catholics: A Framework for Action

The framework outlines key areas of action and provides for supporting Native American and Indigenous Catholics. It covers topics ranging from marriage and family support to community justice and cultural preservation. The following authors will explore these areas in detail, providing comprehensive reviews of the challenges and opportunities in their industry.

by Don Larry Deschaine, PhD



Native American and Indigenous Catholics: A...

Private

Created by you
Last viewed 16 seconds...

Nature-Inspired AI/ML: Learning from Earth's Greatest Innovators

How Natural Phenomena Shape Modern Problem-Solving

In the realm of Artificial Intelligence and Machine Learning, nature has become our greatest teacher. For 3.8 billion years, Earth has been conducting the ultimate experiments in optimization and adaptation. Now, we're tapping into this vast reservoir of wisdom to revolutionize how we approach complex problems in technology and beyond.

This presentation will explore how natural phenomena are inspiring cutting-edge AI/ML algorithms, transforming the landscape of modern problem-solving, and unveiling exciting new possibilities.



Nature-Inspired AI/ML: Learning from Earth's...

Private

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Last viewed 43 seconds...

Quantum Technology and STEM Careers: A Path Forward for Underserved Students

Opening the Door to Quantum Opportunities

by Don Larry Deschaine, PhD



Quantum Technology and STEM Careers: A Path...

Private

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https://www.grammarly.com/



Responsible AI that ensures your writing and reputation shine

Work with an AI writing partner that helps you find the words you need—to write that tricky email, to get your point across, to keep your work moving.

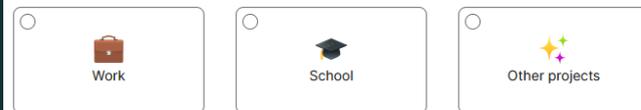
Sign up It's free →

Sign up with Google

Tell us a little about yourself

We'll use your answers to help you get the most out of Grammarly.

Most of my writing is for:



Highly customizable

Demo document Goals 68 Overall score

The basics

Mispellings and grammatical errors can effect your credibility. The same goes for misused commas, and other types of punctuation . Not only will Grammarly underline these issues in red, it will also showed you how to correctly write the sentence.

Underlines that are blue indicate that Grammarly has spotted a sentence that is unnecessarily wordy. You'll find suggestions that can possibly help you revise a wordy sentence in an effortless manner.

But wait...there's more?

Grammarly Premium can give you very helpful feedback on your writing. Passive voice can be fixed by Grammarly, and it can handle classical word-choice mistakes. It can also help with inconsistencies such as switching between e-mail and email or the U.S.A. and the USA.

It can even help when you wanna refine ur slang or formality level. That's especially useful when writing for a broad audience ranging from businessmen to friends and family. don't you think? It'll inspect your

B I U H1 H2 [link] [list] [list] [text] 174 words ▲

Review suggestions Write with generative AI Check for AI text & plagiarism

Review suggestions 18

Correctness Clarity Engagement Delivery Style guide

- Correctness · Fix your grammar
Accept 3 suggestions at once
- Correctness · Correct your spelling ⓘ
- Mispellings** Mispellings and grammatical...
Accept Dismiss [copy] ...
- Correct your spelling
effect
- Remove the comma
commas,
- Remove a space
punctuation .
- Add the word(s)
,
- Change the verb form
showed
- Unsplit the infinitive

⚡ Increase the impact of your text New!

These tools are useful for researching Quantum and Quantum AI



Embracing the Future: AI and Quantum Computing

As we conclude our journey through the fascinating world of AI and quantum computing, it's clear that we stand on the brink of a technological revolution. These advancements promise to transform every aspect of our lives, from healthcare and education to space exploration and environmental conservation.

- Applications shown are in wide use, and their spread and growth is impacting most areas of our lives as these “far out” concepts are quickly becoming practical.

The future is bright, filled with possibilities we're only beginning to imagine. As lifelong learners, it's crucial to stay curious, adaptable, and engaged with these emerging technologies. They will shape the world we live in and offer unprecedented opportunities for growth, innovation, and human progress.

Practicum Classes: See CLL schedule for availability.

Contact Information: larry.m.deschaine@alum.mit.edu

LATE NIGHT
RAMBLING
VERSION



AI and Quantum Computing: A Technological Revolution

We are on the brink of transformative advancements that will impact healthcare, education, space exploration, and environmental conservation.

Applications are in active use, quickly becoming practical tools in our daily lives.

The future holds exciting possibilities. As lifelong learners, staying curious and engaged with these technologies is vital for growth and innovation.

Practicum Classes: Refer to the CLL schedule for availability.

Some Accessible Further Reading (Print / Audiobook)



Einstein's Dice and Schrödinger's Cat

How Two Great Minds Battled
Quantum Randomness to Create
a Unified Theory of Physics



Paul Halpern

read by Sean Runnette • unabridged