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**Insight to Impact**  
Turning Data into Better Decisions

Business Analytics Blog



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## **AI & Advanced Technologies**

# Unlocking Business Intelligence with LLMs: “The Future of Analytics-Driven Decision Making”

Advaith Shankar & Dr. Helen Josephine V L

**Imagine this:** You're a business analyst at a growing retail company. Your manager walks in and says:

*“Can you quickly summarize all customer reviews from the past 6 months, identify top complaints, and recommend changes by tomorrow?”*

You pause. Normally, this would take hours or maybe days of manual work. But now, you have access to a Large Language Model (LLM).

In just minutes, the AI scans thousands of reviews, summarizes customer sentiments, identifies key complaints like **“late delivery”** and **“poor packaging”**, and even suggests practical next steps.

You didn't just analyze data and you understood your customer better, faster, and deeper. Welcome to the new world of **analytics driven decision making** powered by LLMs.

## 1. What Exactly Are LLMs?

LLMs (Large Language Models) are advanced artificial intelligence systems trained on massive amounts of text data. Models like OpenAI's GPT, Google's Gemini, and others can understand, generate, and summarize human-like language.

Unlike traditional analytics tools that rely solely on structured data (rows and columns), LLMs thrive on unstructured data, emails, chat logs, reviews, social media posts, and even PDFs.



<https://www.softwebsolutions.com/resources/llm-for-data-analysis>

## 2. Why LLMs Matter in Business Analytics?

In today's data-driven world, over **80% of business data is unstructured**. That means a huge portion of valuable insights is often overlooked or underutilized.

This is where LLMs step in. They

empower analysts to:

- Extract insights from customer feedback and support logs
- Auto-generate summaries of lengthy reports or meeting transcripts
- Assist in market research and competitor analysis
- Communicate findings in plain, stakeholder-friendly language
- Power smart dashboards and AI assistants

## 3. Real-World Scenario: LLMs in Action

Let's take a **telecom company** as an example. It's losing customers but doesn't fully understand why.

An analyst uses an LLM to process:

- Customer support transcripts
- Survey responses
- Chat-bot logs
- Online reviews

The LLM identifies the top 3 churn drivers:

1. Call drops in specific regions
2. Confusing billing terms
3. Long wait times for service

It even generates actionable recommendations like:

*"Improve signal infrastructure in southern zones,"* and *"Revise bill design for clarity."*

Instead of guessing, the company makes data-backed, customer-informed decisions.

#### **4. Analysts + LLMs = Augmented Intelligence**

LLMs aren't here to replace business analysts. They're here to **augment** them.

Think of LLMs as:

- Your data co-pilot
- Your research partner
- Your fastest intern

They help you:

- Work faster
- Ask better questions
- Deliver deeper insights

This shift allows analysts to focus on **what really matters**: Strategy, storytelling, and impact.

#### **5. The Future of Business Intelligence**

The future of business analytics is not just visual dashboards and structured KPIs. It's about understanding language and context at scale—and LLMs are the game-changer making that possible. If you're a business analyst, now's the time to explore how LLMs can fit into your workflow—because those who understand language will lead the data conversation.

#### **Final Thought**

LLMs are not a tech trend.

They are the next evolution of analytics.

And the most valuable analysts of tomorrow?

They'll be the ones who know how to talk to data—and make it talk back.

# **Organoid Intelligence vs Artificial Intelligence**

**Kiranshree & Dr Saseekala M**

## **Will Mini Brains Team Up with Machines or Take Over?**

You've probably heard of AI from ChatGPT to Siri to self-driving cars. But now, scientists are talking about something even cooler: Organoid Intelligence (OI). What if, instead of just using code and chips, we could build computers using tiny blobs of real brain cells? Sounds like a sci-fi movie, right? But it's actually happening.

In this blog, let's explore what OI and AI are, how they're different, whether OI will replace or work with AI, and why this matters for our future.

## **What is Artificial Intelligence (AI)?**

AI (Artificial Intelligence) is when machines are trained to "think" and solve problems like humans. It learns from data – like how Netflix recommends what to watch next or how Google Maps finds the fastest route. It's smart, but it doesn't understand things like a human does. It's all about patterns and algorithms.

Imagine training a robot to recognize cats. You show it 10,000 cat photos and it learns what a cat looks like. That's AI.

## **What is Organoid Intelligence (OI)?**

Organoid Intelligence is a new idea where scientists grow tiny 3D clusters of brain cells (called organoids) in a lab. These organoids act like mini-brains – they can send signals and learn, just like the brain does.

One experiment even taught brain cells in a dish to play a video game (Pong). The mini-brain learned how to play – which is mind-blowing!

Unlike AI which is made of circuits, OI uses real living brain cells. It's a form of biocomputing building computers from biology.

## OI vs AI: What's the Difference?

Feature	Artificial Intelligence (AI)	Organoid Intelligence (OI)
What it's made of	Software + silicon chips	Living brain cells (organoids)
How it learns	From huge datasets and patterns	Like a brain – learns from experience
Energy usage	High (needs a lot of electricity)	Low (like a brain – very efficient)
Stage of development	Already used in daily life	Still in early lab experiments
Understanding	Mimics thinking	Actually made of brain-like cells

## Will OI Replace AI?

Not really.

OI is not here to fight AI it's here to team up. Think of OI and AI as two superheroes. AI is super fast and powerful with numbers. OI is better at learning like humans do, using less energy. The future might be a mix of both hybrid systems that use the speed of AI and the smartness of OI.

## What's in it for the Future?

Here's what AI + OI might mean for us:

### 1. Smarter, Greener Tech

Computers could become super powerful but use less energy – helping the environment.

### 2. Better Healthcare

We could test new brain treatments on organoids instead of animals or humans.

### 3. New Ways to Learn

Imagine an AI tutor that learns how you learn and helps you better than any textbook.

### 4. Cool Career Paths

Love both bio and tech? OI needs people who can grow brain cells and write code.

### 5. Understanding the Brain

We might finally understand how the brain works and cure brain diseases like Alzheimer's.

## So... Who's Smarter?

Today, AI is winning – it's faster, more reliable, and already used everywhere.

But OI is just getting started – and it might give us computers that think more like humans.

The smartest systems of the future might use both:

The logic of machines + the learning power of real brain cells.

Final Thought: The Future Needs You

Whether it's AI, OI, or something new, these technologies are shaping the future. And guess what?

You could be part of it. Whether you're into science, coding, ethics, or just love exploring new ideas – the world of AI and OI is waiting.



<https://www.thedigitalspeaker.com/organoid-intelligence-change-future/>

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## Quantum at the Edge: Shaping the Future of Banking and Security

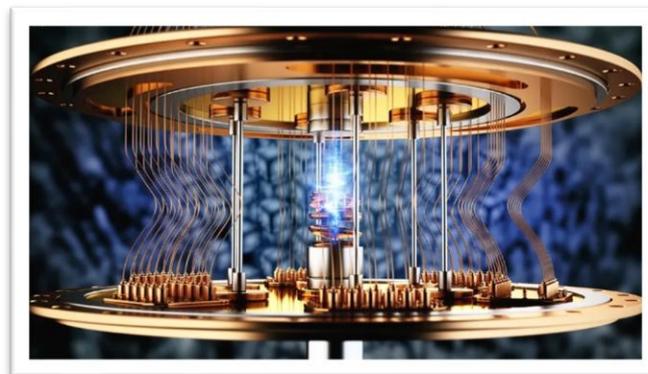
N S Shalinie & Dr Lakshmi Shankar Iyer

Digital transactions and cybersecurity risks evolve at lightning speed, banks and financial institutions need more than just traditional defences; they need intelligence and agility. That is where the emerging partnership between Quantum AI and Edge Computing comes in. Quantum AI & Edge Computing are setting the stage for a major transformation in how the industry manages risk, customer experiences, and digital threats.

Quantum computing, once limited to academic labs, is beginning to take its first steps into mainstream business operations. By harnessing the extraordinary computational power of quantum algorithms, Quantum AI can tackle complex problems that used to be out of reach for typical computers. Meanwhile, Edge Computing ensures that data processing takes place close to where it's generated, from branch offices and ATMs to mobile devices, enabling rapid analysis and instant decision-making.

The result is? Quantum Edge AI: a technology that marries the brainpower of quantum with the speed and accessibility of edge processing.

Consider fraud detection. Instead of simply flagging suspicious activity for later review, banks equipped with Quantum Edge AI can simulate thousands of possible fraud scenarios in real time, stopping threats before they impact customers. This proactive approach not only improves security but also builds trust and peace of mind. The impact goes much beyond security. With access to real-time data, banks can deliver truly personalized financial advice or credit decisions within seconds, right at the customer's point of contact. This means more relevant, faster services and a more responsive customer experience.



<https://www.forbes.com/councils/forbestechcouncil/2025/08/06/how-quantum-computing-is-shaping-the-future-of-finance/>

Cybersecurity is also poised for a leap forward. By applying quantum-grade encryption and AI-driven anomaly detection at the edge, organizations can identify and neutralize sophisticated threats without relying on slower, centralized infrastructure. Although, barriers remain, quantum hardware needs to become more compact and reliable, and integrating these advanced systems with current technology stacks is no small feat. However, breakthroughs in quantum devices and hybrid cloud solutions are closing the gap rapidly. For business leaders, the message is clear: Quantum Edge AI is no longer just a vision for the future. It is a tremendous opportunity, one that makes banking smarter, security resilient, and client services customisable. Taking the lead in this convergence could set the standard for innovation and trust in the digital era.

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# Unlocking Business Development with LangChain

Clara Anna George & Dr. Divya D.

AI is no longer just a buzzword; it is a competitive edge. At the heart of this transformation is LangChain, a powerful open-source framework that helps developers build applications using large language models (LLMs) like GPT-4. But beyond the hype, how exactly can LangChain be leveraged to drive real value in business development? Let us break it down.

## What is LangChain, really?

LangChain is not an AI model. It is a framework that lets you integrate LLMs into workflows, connect models to external tools (like search, databases, APIs), and build complex multi-step reasoning chains.

Think of it as the glue between your AI model and your business logic.

Business development thrives on speed, insight, and personalization, and these are qualities that LangChain can significantly enhance. By integrating large language models into your workflows, LangChain empowers teams to automate and streamline high-impact tasks. These include quickly researching prospects, generating tailored sales pitches, conducting real-time competitive analysis, summarizing lengthy documents or reports, and enriching CRM entries with up-to-date, contextual information. Instead of spending hours on manual tasks, business development professionals can now leverage LangChain to make faster, smarter, and more personalized decisions at scale.

## One question may arise: Why LangChain and Not Just GPT-4 (or other Models) Alone?

While large language models like GPT-4 are incredibly powerful, they have several limitations when used on their own. They lack built-in memory and workflow logic, making it difficult to manage multi-step processes or maintain context across sessions. Additionally, they cannot natively access real-time data, external APIs, or integrate smoothly with structured tools such as databases or CRMs. This is where LangChain becomes essential. It bridges these gaps by introducing memory capabilities, tool integration, chaining logic, retrieval mechanisms, and agents that allow for dynamic, context-aware interactions.

The following sections provide a detailed look at each use case where LangChain adds value:

### Use Case 1: Prospect Intelligence at Scale

Imagine your team needs to qualify 100 potential leads. Manually scanning LinkedIn profiles, websites, and company descriptions can take days. With LangChain, you can scrape data from websites or databases, use an LLM to summarize the company's industry, product, and fit, score or segment leads based on relevance. With this solution, prospecting that once took hours now takes minutes.

### Use Case 2: Personalized Sales Pitches

Generic outreach doesn't cut it anymore. LangChain allows you to auto-generate customized pitches based on the company's tech stack, market position, recent news or funding, common pain points in their sector.

Example: "We noticed your platform uses Kafka for data streaming. Our solution can enhance your observability stack with zero overhead." This level of detail can be generated automatically per lead.

### Use Case 3: Real-Time Competitive Analysis

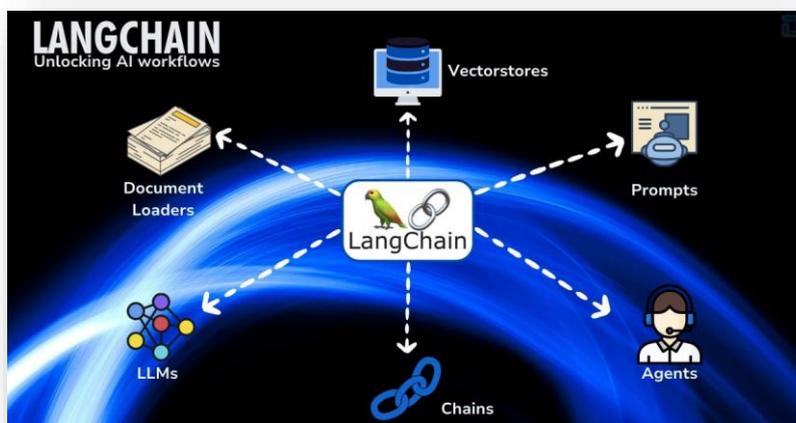
LangChain can integrate with real-time web search tools or your internal knowledge base to track competitor updates, compare feature sets, summarize press releases or product launches. By chaining LLMs with search APIs or internal wikis, you get dynamic dashboards that evolve with the market.

### Use Case 4: Summarizing Long Documents or Contracts

LangChain supports document loaders and chunking, meaning it can summarize partnership agreements, investment term sheets, technical whitepapers. Instead of reading a 20-page PDF, get a digestible 5-bullet summary in seconds using LangChain.

### Use Case 5: CRM Automation & Enrichment

LangChain can act as a middle layer between your CRM and external sources. For instance, enrich a lead's profile with data from LinkedIn or company databases, auto-generate follow-up messages, or predict next best actions based on customer data. This isn't just automation, it is context-aware automation and before you jump it is important to consider hallucinations, data privacy concerns and cost Scaling.



**Final Thoughts:**

LangChain is not just empowering business development teams, it is redefining what they can achieve. Rather than replacing human creativity, it amplifies it with scalable, intelligent workflows that turn raw data into action at lightning speed. From automating client research to generating bespoke outreach and hyper-efficient summarization, teams move seamlessly from insight to impact.

In practice, a business development team can now deploy a multi-agent system that researches market news, enriches leads, drafts pitches, and tracks campaign outcomes, all with traceable evaluation metrics and cost-controlled LLM usage. LangChain's recent ecosystem updates from GPT-5 and Gemini 2 support to enterprise connectors for Salesforce or SAP and production template agents have made this workflow both reliable and repeatable.

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**Analytics, Automation & Business Applications**

# Unlocking the Power Of NO-CODE Workflows: A Deep Dive into N8N Automation

Ashwin Satheesh & Prof. Shailendra Kadre

## Introduction: Automation for Everyone

In today's digital era, businesses and individuals are constantly seeking smarter solutions to manage repetitive tasks. Enter n8n, the revolutionary no-code/low-code automation tool that's empowering non-developers and engineers alike. Forget about burning hours on mundane chores—n8n lets you build your own powerful automations, connecting your favorite apps, services, and data sources with minimal code and maximum creativity.

## What is n8n? Meet the Workflow Magician

n8n stands for “nodemation,” combining “node” (as in nodes of a workflow) with “automation.” At its core, n8n is an extendable workflow automation tool. It allows you to create flows (called “workflows”) visually, dragging and dropping nodes to perform tasks such as:

- Sending emails automatically when you get a new sale.
- Pulling data from Google Sheets and pushing updates to Slack.
- Scraping web data, transforming it, and feeding it into CRMs or databases.

Unlike rigid automation tools, n8n offers almost limitless flexibility for how you manipulate and transfer data. With more than 350 built-in integrations (think Gmail, Dropbox, Airtable, and more) and the ability to add custom logic via JavaScript functions, n8n is beloved by both technical and non-technical users.

## Why Choose n8n Over Other Automation Tools?

- **Open Source & Self-hostable:** Unlike many competitors (Zapier, Integromat), n8n can be hosted on your own infrastructure, ensuring privacy, security, and full control over your automations.
- **Powerful Conditional Logic:** Need your workflow to branch based on data? n8n offers sophisticated IF/ELSE logic, loops, and code snippets right in the workflow builder.

- **Unlimited Workflows:** With n8n's self-hosted option, limitations on triggers and tasks are a thing of the past.
- **Community Driven:** Being open source, n8n's library of integrations grows rapidly, thanks to a thriving community of contributors and enthusiasts.

## **Let's Automate! Building a Real-World n8n Workflow**

### **The Scenario: Automated Lead Enrichment**

Imagine you run a small marketing agency. Whenever someone fills out your website's contact form, you want to:

1. Collect their info (name, email, company).
2. Fetch additional company data from LinkedIn or Clearbit.
3. Add the details to Google Sheets.
4. Notify your team in Slack.

Here's how you'd do it with n8n:

1. Webhook Node: Receives form data in real time.
2. HTTP Request Node: Pulls company data from a public API.
3. Google Sheets Node: Appends a new contact row.
4. Slack Node: Sends a notification to your sales team.

No need to write a single back-end script or manage integrations—just visually link the nodes in n8n. Want to add another step, such as a personalized email reply? Drag in the Gmail node!

### **Supercharge Your Business with n8n**

Modern businesses need agility. Automating with n8n allows you to:

- **Save Time:** Focus on strategic work while tedious chores run in the background.
- **Reduce Errors:** Eliminate manual data entry and avoid costly mistakes.
- **Build Complex Logic:** Handle branches, loops, and even custom JavaScript, all visually.

- **Scale Operations:** n8n grows with you. As your business scales, so do your workflows—without extra per-task fees.

### ***Getting Started: Your First Steps with n8n***

#### **1. Install n8n**

- Use Docker: `docker run -it --rm -p 5678:5678 n8nio/n8n`
- Or try the cloud version for instant access (great for beginners).

#### **2. Explore the UI**

The intuitive interface lets you build workflows by dragging nodes and linking them visually.

#### **3. Connect Your Apps**

- Choose from 350+ nodes, or add custom integrations via HTTP requests and code.

#### **4. Deploy and Monitor**

- Trigger workflows on schedule, via webhooks, or on app events. Monitor your executions for errors or bottlenecks.

### **Real-World Inspiration: Amazing n8n Use Cases**

- **E-commerce:** Auto-notify customers of order status, sync inventory, and analyze reviews across platforms.
- **Content Creation:** Schedule posts to Twitter and LinkedIn, grab insights from analytics, and alert you to trending topics.
- **Customer Support:** Automate ticket assignments, collect feedback, and send summary reports to management.

### **Final Thoughts: The Future is Automated (and Human-Friendly)**

Automation doesn't have to be the exclusive playground of developers. With tools like n8n, anyone can build robust workflows and connect the dots between scattered services, boosting productivity and creativity. Whether you're a startup founder, freelancer, or team manager, now's the time to dive into the world of no-code automation.

The best part? The n8n community is always ready to help, whether you want to tackle a complex workflow or share your latest automation hack.

*Build smarter. Save time. Embrace automation with n8n—and watch your workflow worries disappear.*

# **Your Bias Is in the Model: Why Diversity Matters in Business Analytics**

**Harsh Goyal & Dr. Vinay T V**

## **What We Don't See in the Data**

There's something almost comforting about numbers. They seem clean, precise and free of opinion. As students and future business leaders, we're taught to rely on data to guide our decisions. We're told that the numbers will show us the truth.

But the deeper I go into business analytics, the more I've realized this: data isn't neutral and neither are the models we build from it.

Behind every dataset is a set of human choices. What to measure. What to ignore. How to define success. These decisions are made by people, and those people bring their own assumptions, experiences and biases into the process.

## **When the Model Misses the Mark**

You don't have to look far to find examples of analytics gone wrong. Imagine a company that uses a predictive model to screen job applicants. If that model was trained on years of

historical hiring data and that data mostly reflects men in leadership roles - it may quietly start filtering out qualified candidates who don't match that pattern. Not because they're less capable, but because the model learned to see them as "less typical."

It's not that the model is flawed on its own. It's that it was shaped by a narrow history and likely built by a team that didn't question that history deeply enough.

## **The Risk of Similar Voices**

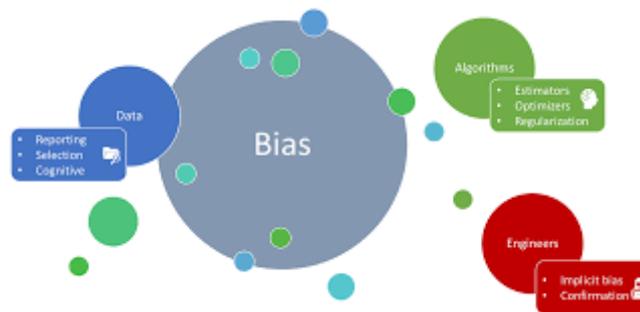
In many analytics teams, the people building the models share similar backgrounds. Maybe they studied the same subjects, grew up in similar places, or have similar worldviews. That kind of alignment can make collaboration easier, but it can also lead to blind spots.

When everyone at the table sees the world in roughly the same way, it's easy to overlook important questions like:

- Is this data representative of the people we're trying to serve?

- Are we unintentionally reinforcing old patterns by the way we train our models?
- Are we testing this tool on the full range of users - not just the majority?

If we don't ask these questions, we risk building systems that look smart on paper but fall short in practice - especially for the people who already sit at the margins.



## What Diversity Really Brings to the Table

When we talk about diversity in data teams, it's not just about representation - it's about results.

A more diverse team brings more lived experience to the problem. That means they're more likely to:

- Challenge assumptions others take for granted.
- Spot gaps or risks in the data.
- Raise issues others might not even notice.

It's not just a feel-good ideal. It's a practical advantage. Models built by teams that reflect a wider range of perspectives are often more accurate, more inclusive, and more aligned with the real world.

## Our Role as Future Business Leaders

Most of us in business school won't spend our careers writing code or training models. But we will lead teams, make strategy decisions, and rely on analytics to guide us. That gives us both influence and responsibility.

So the next time we're presented with a report, a dashboard, or a "smart" model, we need to look beyond the output and ask:

- Where did this data come from?
- Who's being included or excluded?
- What assumptions are driving this analysis?
- And who was involved in building it?

These aren't just technical questions. They're leadership questions.

### **Closing Thoughts: Models Are Human, Too**

It's easy to think of business analytics as something purely technical, something objective and mathematical. But the truth is, every model we build reflects human choices. And those choices reflect who we are.

If we want analytics to work for everyone, we need to make sure that the people behind the data, our teams, our classmates, our future colleagues, bring a full spectrum of experiences to the table.

Because in the end, the best models don't just predict outcomes. They help us make better, fairer decisions. And that starts with the people who build them.

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## **AI in Society, Media & Human Experience**

# **Invisible Footprint: How the Generative AI Boom is Accelerating Environmental Damage**

**Harish R & Dr. Rosewine Joy**

Digital innovation has been transformed by generative AI models like ChatGPT, Gemini, and Claude — but this progress carries a high environmental cost. The data centres that power each exchange consume large amounts of electricity and water. Following the 2022 surge in general AI, attention has shifted from abstract ethics to its impact on the environment, including measurable energy and water usage.

## **The Hidden Energy Cost**

AI's carbon footprint comes from training and inference. Training requires thousands of GPUs running for weeks, consuming massive amounts of electricity and emitting substantial CO<sub>2</sub>. Today, inference — everyday model use — is the pressing issue. A single AI prompt can use about three watts, more than ten times a Google search. With billions of daily queries, energy use is rising rapidly and data-centre electricity demand could double by 2030. This added load is comparable to annual emissions of many households.

## **Water: The Other Invisible Cost**

Cooling high-performance servers consumes vast quantities of water. Some studies suggest a few prompts can require up to 500 millilitres of water — roughly one bottle — to cool equipment. Multiplied globally, this becomes billions of gallons annually and strains water-scarce regions, especially near large data centres.

## **Hardware and Lifecycle Emissions**

Environmental harm extends beyond operations. Making the GPUs and TPUs to power these AI systems is a power-hungry process that relies on rare earth metals. Frequent model updates can really cut short the lifespan of the hardware, which increases carbon emissions and e-waste. Also, the way users interact with the systems- giving the AI a long, rambling query is going to increase the amount of computing power it needs to use, and can lead to as much as four times more emissions than if they'd just been concise and to the point.

## **Green AI: Towards a Sustainable Future**

There are practical ways to reduce AI's footprint:

- **Small Language Models:** You can make do with compact models like Phi-2 or small LLaMA variants on a whole lot of tasks - and they guzzle way less power than the big boys.

- Running on renewables: Offloading computing workloads to places where the grid is powered by solar, wind, or hydro power does make a big dent in those emissions.
- Optimizing AI for efficiency: Techniques like Quantization and Mixture of Experts help by only firing up the parameters that are actually needed for each query - not the whole works.
- Getting carbon transparent: The right tools let businesses actually see what kind of carbon footprint their AI queries are costing them - and make some serious reductions.

Together, these measures can sharply reduce AI's environmental burden when adopted widely.

### **Conclusion**

Generative AI is shaking things up in all sorts of industries, but let's face it, there's no getting around the environmental price tag. Cutting back means you have to pick smaller models for straightforward tasks, encourage people to give briefer prompts, give models a workout to make them more efficient, and not be afraid to run things on solar panels and the like. Transparency, efficient system design, responsible user behaviour, and sensible policy together can ensure that AI advances without sacrificing the planet.



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