Wise and Effective Use of Large Language Models

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The Core Question: How Should We Use AI?

Three farmers were each given a strong ox and a new plow by their master.

- The first said, ‘Oxen are too messy and unpredictable—I’ll do it by hand.’ He worked hard, but his field remained small and yielded little.
- The second said, ‘This ox can do the work for me,’ and let it run without guidance. It wandered, trampled crops, and the field became a ruin.
- But the third farmer yoked the ox, guided it with care, tilled straight rows, and prayed for rain. In the end, his field bore a rich harvest.

Which of them was wise in the eyes of the master?

Section 1: Understanding the Technology

Before we can use a tool wisely, we must first understand what it is. In this section, we'll cover:

- **What an LLM is** and how it's created.
- The **key insight** into its nature.

What is a Large Language Model (LLM)?

- An LLM (like ChatGPT) is an AI that can generate natural language, trained on massive amounts of human-written content.
- **How It's Made:**
  - **Stage 1 - Pretraining:** It reads billions of sentences to learn word patterns by predicting the next word. (e.g., "God created the heavens and the..." → earth)
  - **Stage 2 - Fine-Tuning (RLHF):** Humans rate and correct its responses to fine-tune it for helpfulness and alignment with human values.
- **Key Insight:** LLMs reflect human intelligence—which is also flawed and limited.

Section 2: A Framework for Wise Use

To understand AI's limitations and potential, I suggest two mental models.

- **AI as a Tool** 🛠️: To pursue diligence.
- **AI as a Book** 📖: To practice discernment.

These models help us frame appropriate applications and anticipate risks.

Mental Model 1 — AI as a Tool 🛠️

> **Getting Things Done (More) Efficiently**

- **Concept:** AI as a tool for organizing and executing tasks (more) efficiently.
- **Historical viewpoint:**
  - Engines/machines transformed physical work.
  - LLMs are transforming knowledge work.
- **Guiding Principle:** Beware of laziness and pursue diligence. *Using AI simply to avoid effort is its easiest misuse.*

Mental Model 2 — AI as a Book 📖

> **Personalized & Dynamic Knowledge**

- **Concept:** AI as a personalized, adaptive, and dynamic book.
- **Historical viewpoint:**
  - Oral cultures → Written texts → Printing press → Internet → Google Search → ChatGPT
  - Represents a new layer of interactive knowledge distillation
- **The Storyteller Twist:** This "book" is also a creative storyteller.
  - It can produce persuasive words, but they may not be true.
  - Responses are often plausible and confident but could be false.
- **Guiding Principle:** Discernment is essential. The "book" can produce persuasive words that may be false, even though plausible and confident sounding.

A Note on Trust: Books vs. AI

The “Book” model raises a critical question: **When should you trust it?**

- We have heuristics for traditional media. We might trust a peer-reviewed textbook more than a website, which we trust more than an anonymous chat message.
- However, we have poor mental models for AI. An LLM can generate content that *sounds* as authoritative as a textbook but may be completely fabricated.
- Developing discernment for AI-generated content is an essential new skill.

The Multiplier Principle: Your Knowledge is Key

> The effectiveness of an LLM is directly proportional to your own understanding.

- Think of it as a **1.5x or 2x multiplier** of your abilities, not a substitute for them.
- If your own understanding of a topic is 0, then even at 2x that is still 0.
- Like any tool, its power depends on the skill of the user.
- To use an LLM effectively, you must first focus on deepening your own understanding.

The Illusion of Competence

> LLMs can create a false sense of mastery, making you feel skilled even when you are not.

Why it Happens

- **Fluency & Compliance:** LLMs generate persuasive text and rarely challenge your ideas.
- **False Confidence:** Because the output *looks* professional, you may believe you have mastered the skill (e.g., writing or coding).

The Reality

- **Skill is Required:** High-quality work still requires deep human understanding and critical thinking.
- **The Multiplier Effect:** A poor writer/coder with an LLM will still produce poor results.

A Test of Competency

- To verify your competence, ask: **“Can I explain this concept or code to a peer without the LLM’s help?”** or **“Can I explain this concept or write the code without the LLM’s help now?”**

The Discernment Spectrum: You Are Responsible

- The intensity of your validation should match the stakes of the task.
- You are always responsible for the final work.
- Examples
  - **Brainstorming & Learning** - Low stakes. You don't need to scrutinize everything but remain mindful that information may be flawed.
  - **Writing & Content Generation** - High stakes. You **MUST** carefully validate all information and be able to justify every claim.
  - **Coding** - Mixed stakes. A quick prototype is low-stakes. Deployed code is high-stakes and must be validated line-by-line.

Section 3: A Practical Guide to Effective Use

Now let's move from theory to practice. We'll learn how to interact with an LLM effectively by treating it like a personal assistant.

- Mental model for using LLMs effectively: **Your Personal Assistant**
- Give as much instruction as possible (e.g., with the **PARTS** framework).
- Provide rich **Context**.
- **Refine** the output through conversation.

How to Use LLMs Effectively: Your Personal Assistant

> The best way to interact with an LLM is to think of it like a personal assistant.

- **Your Role:** You provide clear instructions (prompts) and the relevant information (context) for the task.
- **The LLM's Role:** It uses its vast training and the context you provide to perform the task.

PARTS Prompts for Clearer Instructions

Framework Overview

- **P – Purpose** What is the primary goal or task you are trying to accomplish?
- **A – Audience** Who is the final output intended for? This dictates the level of complexity, language, and style.
- **R – Role** What persona or role should the AI adopt? This influences its perspective and voice.
- **T – Tone** What is the desired feeling or attitude of the response? (e.g., formal, friendly, academic).
- **S – Scope** What are the specific constraints or boundaries? (e.g., length, format, key elements to include/exclude).

Example Prompt

Please act as a friendly and experienced TA for an introductory AI course. I need you to explain the core idea behind the backpropagation algorithm.

The explanation should be for a graduate computer engineering student who understands the basics of neural networks but finds the calculus intimidating. Please use a simple, encouraging, and intuitive tone, relying on an analogy to explain the process rather than getting bogged down in complex formulas.

For the scope, please keep the explanation under 400 words. Make sure to give both intuition and the math behind backpropagation.

This is more for formal prompts but in practice you should simply include as much information as you can think of in the prompt.

Providing Context: Better Input = Better Output

> Context is any information relevant to the task, like documents on an assistant's desk. The more information you provide, the better the output will be.

- **Key Principle:** The more of your own content, outlines, and rough notes you provide, the better the LLM's output will be.
- **Practical Tip:** Don't worry about perfect formatting; you can paste in very rough notes. The substance and guidance you provide are what matter most.

Refining the Output: It’s a Conversation

- **Process:** Don’t settle for the first answer. Think of it as a conversation where you clarify, add, and revise to get what you need.
- **Key principle:** It’s often easier to validate and refine an AI’s output than to create it from scratch.
  - *Mindset Shift:* Your role shifts from being a creator to an editor.

Additional Guiding Questions for Wise Use

Continually ask yourself reflective questions when using AI:

- **Does this change the nature or intention of my work?**
  - For example, using LLMs to do peer review can fundamentally alter the nature of the work. Peer review is meant to be a critical evaluation by a human expert, not a machine-generated summary.
  - When using it for communication, are you using it to better express your own message or to letting it determine your message (whether good or bad)?
- **Is this making me lazier or more effective?**
  - When your boss asks you to determine the root cause of a problem, are you using the LLM to avoid thinking through the problem yourself, or are you using it to help organize and clarify your own thoughts?
- **Does this hinder the development of my own critical skills, or does it enhance them?**
- **Am I being diligent in validating the truthfulness or correctness of the output based on the stakes of the task?**

Summary & Key Takeaways

- **Framework:** Use the mental models of a **Tool** (for diligence) and a **Book** (for discernment).
- **Discernment:** You are always responsible for the output. Tailor your validation level to the task's stakes (brainstorming vs. writing vs. coding).
- **Effectiveness:** An LLM is a **Multiplier** of your own knowledge. Deepen your understanding to use it well.
- **How-To:** Treat it like a **Personal Assistant**. Give it clear **PARTS** prompts and rich **Context**. Then, **Refine** the output through conversation.
- **Wisdom:** Continually ask guiding questions to ensure wise rather than foolish use.

Questions?