



Prompt Engineering

Master Cheatsheet 2025

Complete Guide: Beginner to Advanced | RTCFR Framework

■ RTCFR Framework

The **RTCFR framework** is a powerful approach for crafting effective prompts:

| | | | |
|----------|--------------------|-------------------------|--|
| R | ROLE | Define who AI should be | "You are a senior Python developer with 10+ years exp" |
| T | TASK | What to accomplish | "Write a function to validate email addresses" |
| C | CONTEXT | Background info | "This is for a signup form in a Flask web app" |
| F | FEW-SHOT | Example outputs | "test@email.com → Valid, test@ → Invalid" |
| R | REPORT/TONE | Format & style | "Return JSON: {email, is_valid, reason}" |

■ RTCFR Complete Example

| | |
|----------------------|---|
| [R] Role: | "You are a professional content strategist specializing in B2B SaaS marketing." |
| [T] Task: | "Create 5 LinkedIn post ideas for our new AI automation tool launch." |
| [C] Context: | "Target audience: startup founders and CTOs. Tool automates repetitive tasks." |
| [F] Few-shot: | "Post 1: Hook Insight CTA Post 2: Story Problem → Solution" |
| [R] Report: | "Professional but conversational. Under 200 words. Include emojis." |

■ Quick RTCFR Template

| |
|---|
| You are [ROLE with expertise level]. |
| Your task is to [TASK - clear action verb + objective]. |
| Context: [CONTEXT - background, constraints, audience] |
| Examples: Input: [example] → Output: [result] |
| Format: [REPORT FORMAT] Tone: [professional/casual/technical] |

■ Other Prompt Frameworks

| Framework | Components | Best For |
|-----------|---|-------------------|
| CRAFT | Context, Role, Action, Format, Tone | General prompting |
| CO-STAR | Context, Objective, Style, Tone, Audience, Response | Marketing |
| RISEN | Role, Instructions, Steps, End goal, Narrowing | Multi-step tasks |
| RACE | Role, Action, Context, Expectation | Quick prompts |

■ Basic Techniques

| Technique | Description | Example |
|--------------|---------------------------|--|
| Zero-Shot | Ask directly, no examples | "Translate Hello to French" |
| Few-Shot | Provide 2-3 examples | "good→Positive, bad→Negative, great→?" |
| Role/Persona | Assign expertise | "You are a Harvard professor..." |
| Instruction | Step-by-step directions | "1. Read 2. Extract 3. Summarize" |
| Delimiter | Use markers | ""text"" or <context>...</context> |

■ Intermediate Techniques

■ **Magic phrase: "Let's think step by step" — dramatically improves reasoning!**

| Technique | How It Works | When to Use |
|---------------------|-------------------------------------|------------------------|
| Chain-of-Thought | "Let's think step by step" | Math, logic, reasoning |
| Self-Consistency | Generate 3-5 answers, pick majority | High-stakes decisions |
| Prompt Chaining | Output → Next Input | Multi-step workflows |
| Generated Knowledge | Generate facts, then use them | Research & analysis |

■ Advanced Techniques

| Technique | Description | Use Case |
|---------------------|----------------------------------|-------------------------|
| Tree of Thoughts | Explore multiple reasoning paths | Complex problem solving |
| ReAct | Thought → Action → Observation | Tool use, AI agents |
| Reflexion | Generate → Critique → Improve | Creative writing, code |
| Skeleton-of-Thought | Outline first, then expand | Long-form content |
| Meta-Prompting | Ask AI to improve prompts | Prompt optimization |

■ Output Control

| Control | Prompt Addition | Result |
|-------------|--|------------------------|
| Format | "Respond in JSON/Markdown/Table" | Structured output |
| Length | "Max 100 words" or "3 sentences" | Controlled length |
| Uncertainty | "Say I'm not sure if uncertain" | Reduces hallucinations |
| No Preamble | "Skip intro, answer directly" | No fluff |
| Structure | "Headers: Overview, Details, Conclusion" | Organized content |

■ ■ Mega Prompt Structure

| # | Section | What to Include |
|---|--------------|--|
| 1 | Role | Expertise, experience, persona |
| 2 | Context | Background, situation, constraints |
| 3 | Task | Clear objective + action verb |
| 4 | Requirements | Must-haves, specific needs |
| 5 | Examples | Desired output format samples |
| 6 | Format | Response structure (JSON, Markdown, etc) |
| 7 | Tone | Voice and communication style |

■ Power Phrases

| Phrase | Effect |
|--------------------------------------|--------------------------------------|
| "Let's think step by step" | Activates chain-of-thought reasoning |
| "You are a world-class expert in..." | Focuses knowledge, improves quality |
| "If you're not sure, say so" | Reduces hallucinations |
| "Double-check your answer" | Triggers self-verification |
| "Explain your reasoning" | Gets transparent thought process |
| "Consider edge cases" | More thorough analysis |

■ Common Mistakes & Fixes

| ■ Mistake | ■ Fix |
|-------------------------------|--|
| Vague: "Write something good" | "Write 500-word blog: intro, 3 points, conclusion" |
| No context given | "I'm building Flask app, need user auth help" |
| Too many tasks at once | Break into separate prompts |
| No examples provided | Add 1-2 examples of desired output |
| No format specified | "Format as JSON: {name, value, status}" |

■ Quick Reference

| Task Type | Technique | Key Phrase |
|---------------------|------------------|----------------------------|
| Simple Q&A | Zero-Shot | Direct question |
| Specific format | Few-Shot + RTCFR | Show 2-3 examples |
| Math/Logic | Chain-of-Thought | "Let's think step by step" |
| Complex decisions | Tree of Thoughts | "Consider 3 approaches" |
| Multi-step workflow | Prompt Chaining | Sequential prompts |

| | | |
|------------------|------------------|----------------------------|
| Creative writing | Role + Reflexion | Write → Critique → Improve |
|------------------|------------------|----------------------------|

Created by Manoj | The AI Dude Tamil ■

YouTube: The AI Dude Tamil | Master AI, Automation & Prompt Engineering

■ Great prompts = Great results!