AI-Powered Job Hunting for Engineers: From Skills to Job Offer

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Tonight's Plan

- Career → Skills → Job Search → Job Match → Resume → Interview
- We will dive into three questions:
- 1. What am I qualified to do?
  - AI → Skills analysis
- 2. What jobs should I pursue?
  - AI → Job discovery + job matching
- 3. How do I convince an employer I'm the right person?
  - AI → Resume + application + interview preparation

The New Job Search

- You've been working as an engineer for 12 years. Your company restructures, your position disappears, and suddenly you have to find another job.
- What do you have to do?
    1. Search job boards.
    2. Read hundreds of job descriptions.
    3. Decide which jobs you're qualified for.
    4. Modify your resume.
    5. Write cover letters.
    6. Apply.
    7. Wait.
    8. Interview.
    9. Repeat.

- The problem is that **the job search itself becomes a full-time job.**

AI can act as your job-search assistant

- Not someone who makes decisions for you—but something that can help you:
  - Understand your own skills
  - Discover appropriate positions
  - Analyze job descriptions
  - Identify skill gaps
  - Customize your resume
  - Prepare for interviews
  - Practice answering questions
  - Communicate with recruiters

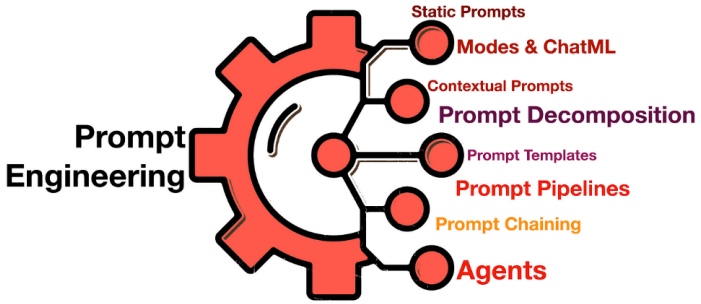
- Don't ask AI:
  - "Find me a job."
- Instead, learn to ask:
  - "Here is my experience. What types of engineering positions would I realistically be competitive for?"

What AI Can—and Can't—Do

- Think of AI as a very capable assistant
- Give it:
  - Context + Instructions + Information
- and it can help you analyze and transform that information.
- For example:
  - "Here is my resume. Here is a job description. Compare them and tell me where I am a strong match, where I'm weak, and what experience I should emphasize."
- That's considerably better than:
  - "Make my resume better."

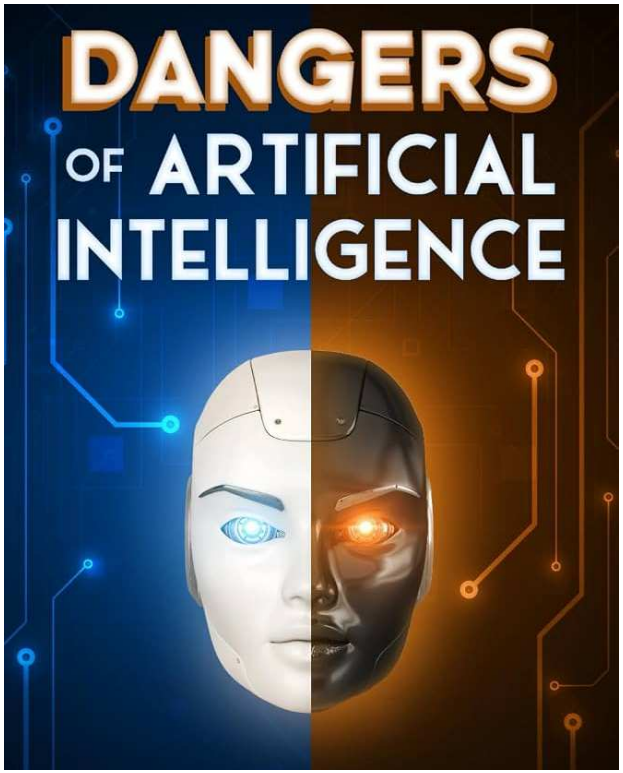
The Concept of Prompting

- A good AI request contains:
  - **ROLE + CONTEXT + TASK + CONSTRAINTS**
- For example:
  - "Act as an engineering recruiter. Here is my 15-year work history. I'm interested in engineering management positions. Identify the five strongest skills in my background and suggest positions where those skills would be valuable. Don't invent experience I don't have."
- That last sentence is particularly important.



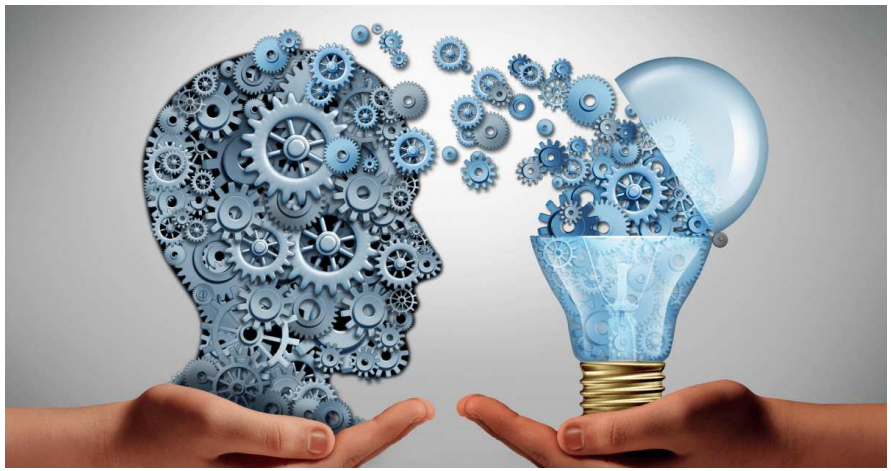
AI's Biggest Danger

- AI can make you sound more qualified than you actually are.
- Never allow AI to manufacture qualifications.
- Yes: AI can rephrase your experience.
- No: It should not create experience.



Turn Your Experience into a Skills Profile

- Most engineers think about themselves in terms of **job titles**.
- AI can help them think in terms of **skills**.
- For example:
  - Senior Manufacturing Engineer
- isn't particularly informative by itself.
- The underlying skills might include:
  - process optimization
  - CAD
  - Six Sigma
  - root-cause analysis
  - PLCs
  - automation
  - project management
  - supplier management
  - quality systems
  - team leadership
  - data analysis



Introducing Richard Beatie

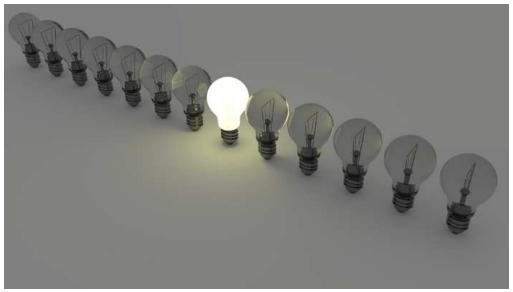
Richard is an Electrical Engineer
lightning and transient protection provider skills

Creating An Action Plan For Richard

- Ask AI to do the work for us:
  - "Analyze my professional experience and identify the technical, business, leadership, and transferable skills demonstrated by my career. Organize them into categories and rank them by strength".
- Having done that, ask AI to take the next step:
  - "Based on these skills, what engineering positions could I reasonably pursue?"
- Note that:
  - AI can find jobs adjacent to your current job.

Adjacent Jobs

- If your current position was: Manufacturing Engineer
- Potential alternatives might include
  - Senior Manufacturing Engineer
  - Process Engineer
  - Manufacturing Engineering Manager
  - Operations Engineer
  - Continuous Improvement Engineer
  - Automation Engineer
  - Quality Engineering Manager
  - Technical Project Manager



- That can be eye-opening if you are someone who has spent 15 years doing essentially one job.

Use AI to Find Jobs That Fit

- What jobs should I actually apply for?
- There are two different questions that need to be answered:
  - **Question #1: What jobs exist?**
    - This is where job sites and search engines come in.
  - **Question #2: Which of those jobs are actually a good match for me?**
    - This is where AI becomes extremely useful.

Demonstration: Job Description Analysis

- Take an actual engineering job posting.
- Paste it into AI.

- Ask:
  - "Analyze this job description. Identify the 10 most important qualifications. Separate them into required technical skills, preferred skills, experience requirements, education requirements, and soft skills."

Hubbell Incorporated

Senior Product Engineer - Largo, FL

Largo, FL · Reposted 2 weeks ago · 32 people clicked apply

Promoted by hirer · Responses managed off LinkedIn

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Forensic Electrical Engineer, P.E.

Demonstration: Job Description Analysis

- Take an actual engineering job posting for a Junior Engineer.
- Paste it into AI.
- Ask:
  - "Analyze this job description. Identify the 10 most important qualifications. Separate them into required technical skills, preferred skills, experience requirements, education requirements, and soft skills."

hellocare.ai

Project Mgmt

Canon

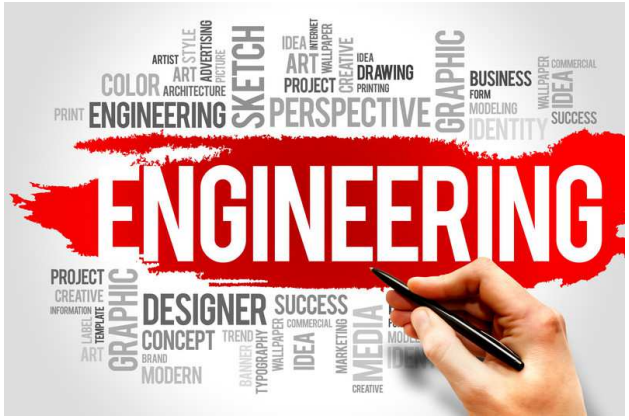
Data Analysis

DTCC

Cybersecurity

Engineer's Skills Profile

- Ask:
  - "Compare my background with this job description. Score the match from 0–100 and explain the score. Identify my strongest matches and my three biggest gaps. Do not assume that I have experience that isn't explicitly supported by my background."



The Biggest Weaknesses of Traditional Job Searches

- "Show me jobs I might be overlooking."
- Prompt:
  - "Based on my skills and experience, identify engineering roles I might not think to search for. For each role, explain why my existing experience transfers to that position."
- **We tend to search for the job we already have.**
- AI can help broaden our search.

Tailor Your Resume to a Specific Job

- "I found a job I want."

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DTCC

Forensic Electrical Engineer, P.E.

- Then look at your existing resume.
- Ask AI to compare them.

Rewriting Your Resume

- Step 1 — Identify the employer's priorities
  - "What are the five things this employer appears to care about most?"
- Step 2 — Identify resume gaps"
  - "Which of those priorities are already demonstrated in my resume, and which are difficult to find?"
- Step 3 — Rewrite the resume
  - Then:
    - "Rewrite my professional summary to emphasize the experience that is most relevant to this position. Use only information contained in my original resume."
  - Then:
    - "Rewrite these bullet points so they clearly communicate the engineering impact of my work. Don't add accomplishments that aren't supported by the original resume."

Before and After

- BEFORE
  - Responsible for managing manufacturing processes and working with production teams.
- AFTER
  - Led cross-functional manufacturing process improvements that increased production efficiency and reduced process-related downtime.

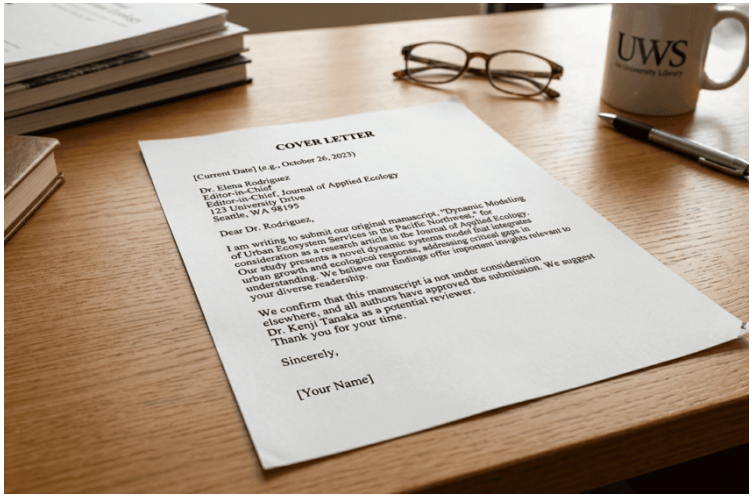
Key Point: Only use the second version if the you actually did those things and can substantiate them.

ATS — Applicant Tracking Systems

- Many employers use software to screen resumes before a human sees them.
- AI can help identify:
  - terminology used in the job description
  - required technical skills
  - Certifications
  - job-specific terminology
  - relevant keywords

- Do not:
  - "Stuff your resume with keywords."
- Instead:
  - Make your legitimate experience easier for the employer—and the ATS—to recognize.

Go Beyond the Resume



- Cover letter
- AI can generate a targeted cover letter based on:
  - resume
  - job description
  - company
  - candidate's actual experience
- Careful:
  - "Don't send a generic AI-generated cover letter."
- Use AI to create the first draft, then make it sound like you.

Be Careful – People Can Tell AI Writing

- Guess what: people are starting to be able to identify work writing by an AI.
- A lack of punctuation is a better indicator of text being AI-generated. Large language models (LLMs) use fewer commas, semicolons, and parentheses than humans, instead crafting overly long sentences with "and" as their most overused word.
- **Some AI generated text stereotypes do ring true**
- AI-generated text is known for being unnecessarily wordy. It has been found that LLMs used rarer words and scientific lingo more often than humans, also favoring polysyllabic words and nominalizations (nouns and adjectives based on verbs, like "nominalization" from "nominalize").
- LLMs are also notorious for rhetorical conventions like "it's not X, it's Y" and the rule of threes (listing three items in a series). This contributes to the way they structure sentences and paragraphs: AI-generated writing tends to feature long sentences with little variety in length, leading to blocky paragraphs with uniform sentences.

LinkedIn Profile

- Ask AI:
  - "Compare my LinkedIn profile with my resume. Identify inconsistencies and suggest improvements that would make my profile more attractive for senior engineering positions."

Networking

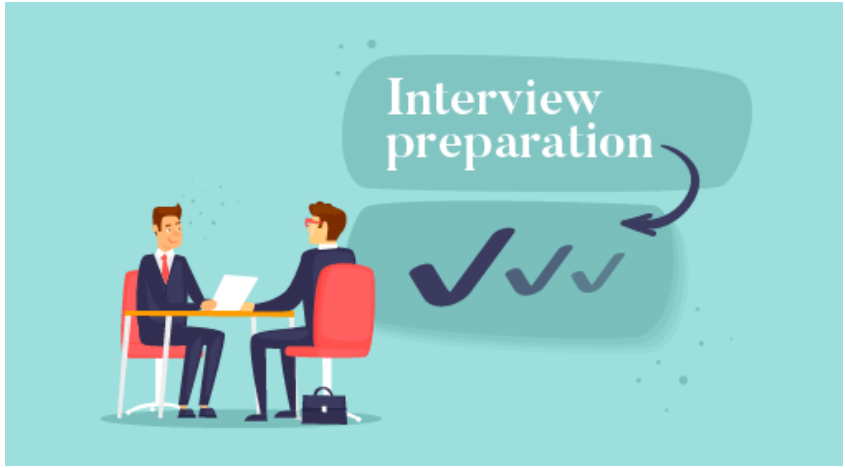
- Give AI a target company and ask:
  - "What types of people should I try to connect with if I'm interested in engineering positions at this company?"

- Then use AI to help draft a personalized networking message.

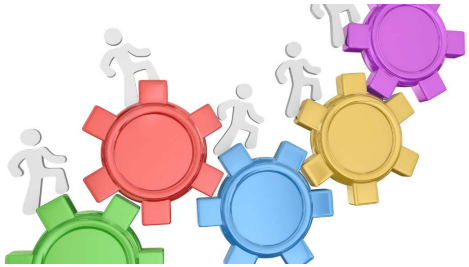
Interview preparation

- This is probably the most immediately useful post-application application.

- Prompt:
  - "Act as the hiring manager for this position. Based on this job description and my resume, conduct a mock interview. Ask me one question at a time. After each answer, evaluate my response and suggest how I could improve it."



A Repeatable Seven-step Process



- 1. Know yourself: Upload your resume and career history.
- 2. Extract your skills: Have AI identify technical, leadership, business and transferable skills.
- 3. Discover opportunities: Ask AI what positions match your skill profile.
- 4. Find actual jobs: Use LinkedIn, Indeed, company career sites, professional organizations, etc.
- 5. Analyze the job: Give AI the job description and determine how well you match.
- 6. Tailor your application: Customize your resume and supporting materials using only your real experience.
- 7. Prepare for the interview: Use AI as a mock interviewer and technical interview coach.

AI Can Also be a Career Advisor

- An engineer shouldn't only ask: "How do I get this job?"
- They should also ask: "Is this job a good career move?"
- Give AI:
  - current salary
  - desired salary
  - years of experience
  - skills
  - geographic preferences
  - desired work environment
  - management vs. individual contributor preference
  - career goals
- Then ask it to compare several opportunities.
- For example:
  - Job A: $105K — excellent technical match
  - Job B: $125K — moderate match, significant learning opportunity
  - Job C: $115K — excellent match, little career growth
- Then ask AI to help analyze the tradeoffs.
- That changes the message from:
  - "Use AI to get a job."
- to:
  - "Use AI to make better career decisions."

What AI Should Do vs. What You Should Do

Let AI Do

- Analyze job descriptions
- Identify relevant skills
- Find transferable skills
- Compare resume to job
- Suggest resume language
- Generate interview questions
- Identify skill gaps
- Research companies

You Do

- Decide whether you want the job
- Verify everything is accurate
- Determine your career direction
- Provide real accomplishments
- Approve the final wording
- Practice answering questions
- Decide whether to choose a job
- Make the final career decision

Final Thought

- Your experience is the valuable asset.

- AI helps you discover where that experience fits—and to communicate it effectively.