CACHE ME IF YOU CAN

CUTTING AI COSTS WITHOUT CUTTING CORNERS

COLORADO STARTUP WEEK 2025

CHRIS MCDERMUT

THE BILLABLE ~~MINUTES~~ TOKENS PROBLEM

AI CHARGES LIKE A LAWYER – EXCEPT IT NEVER REMEMBERS YOUR CASE

WHAT'S A TOKEN?

THE CURRENCY OF AI:

- ~4 CHARACTERS = 1 TOKEN
- 1 WORD ≈ 1.3 TOKENS
- 1 PAGE OF TEXT ≈ 500 TOKENS
- AVERAGE WEBSITE ≈ 2.000 TOKENS
- THIS SLIDE ≈ 85 TOKENS

GPT-4: $0.01 PER 1K TOKENS (INPUT) / $0.03 PER 1K TOKENS (OUTPUT)

THE MATH THAT HURTS

JOB SEEKER (200 JOBS/MONTH):

- 2K INPUT TOKENS × $0.01 = $0.02
- 250 OUTPUT TOKENS × $0.03 = $0.0075
- PER JOB: ~$0.03 × 200 = **$6/MONTH**

REAL ESTATE UNDERWRITER (800 COMPS/MONTH):

- 5 PAGES × 2K TOKENS × $0.01 = $0.10 INPUT
- 250 OUTPUT TOKENS × $0.03 = $0.0075
- PER COMP: ~$0.11 × 800 = **$88/MONTH**

COST CALCULATORS

KNOW BEFORE YOU GO:

- HTTPS://YOURGPT.AI/TOOLS/OPENAI-AND-OTHER-LLM-API-PRICING-CALCULATOR
- OPENAI TOKENIZER → COUNT TOKENS BEFORE SENDING
- TIKTOKEN (PYTHON) → PROGRAMMATIC TOKEN COUNTING

PRO TIP: ALWAYS ESTIMATE COSTS BEFORE DEPLOYING

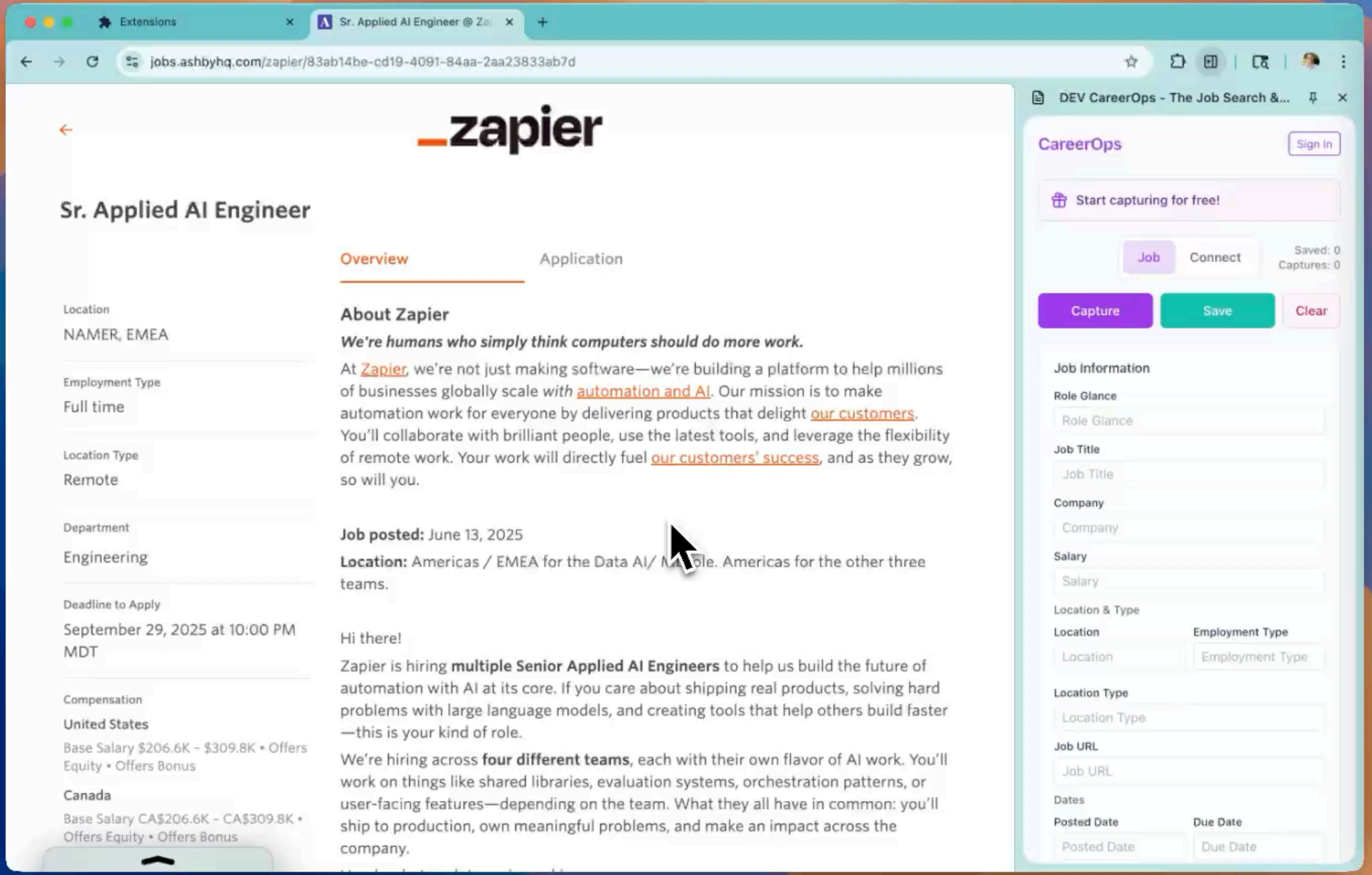
MONITORING TOOLS

TRACK YOUR ACTUAL SPEND:

- OPENAI USAGE DASHBOARD → DAILY/MONTHLY SPEND
- HELICONE.AI → ANALYTICS & COST TRACKING
- LANGSMITH → TOKEN USAGE PER REQUEST
- DIY: LOG `{prompt, tokens_used, cost, timestamp}`

YOU CAN'T OPTIMIZE WHAT YOU DON'T MEASURE

BEFORE CACHING: THE PAIN


Extensions
Sr. Applied AI Engineer @ Za
jobs.ashbyhq.com/zapier/83ab14be-cd19-4091-84aa-2aa23833ab7d
zapier
Sr. Applied AI Engineer
Overview
Application
Location
NAMER, EMEA
Employment Type
Full time
Location Type
Remote
Department
Engineering
Deadline to Apply
September 29, 2025 at 10:00 PM MDT
Compensation
United States
Base Salary $206.6K – $309.8K • Offers Equity • Offers Bonus
Canada
Base Salary CA$206.6K – CA$309.8K • Offers Equity • Offers Bonus
About Zapier
We're humans who simply think computers should do more work.
At Zapier, we're not just making software—we're building a platform to help millions of businesses globally scale with automation and AI. Our mission is to make automation work for everyone by delivering products that delight our customers. You'll collaborate with brilliant people, use the latest tools, and leverage the flexibility of remote work. Your work will directly fuel our customers' success, and as they grow, so will you.
Job posted: June 13, 2025
Location: Americas / EMEA for the Data AI/ M
le. Americas for the other three teams.
Hi there!
Zapier is hiring multiple Senior Applied AI Engineers to help us build the future of automation with AI at its core. If you care about shipping real products, solving hard problems with large language models, and creating tools that help others build faster—this is your kind of role.
We're hiring across four different teams, each with their own flavor of AI work. You'll work on things like shared libraries, evaluation systems, orchestration patterns, or user-facing features—depending on the team. What they all have in common: you'll ship to production, own meaningful problems, and make an impact across the company.
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Captures: 0
Capture
Save
Clear
Job Information
Role Glance
Role Glance
Job Title
Job Title
Company
Company
Salary
Salary
Location & Type
Location
Location
Employment Type
Employment Type
Location Type
Location Type
Job URL
Job URL
Dates
Posted Date
Posted Date
Due Date
Due Date

BEFORE CACHING: THE PAIN IN NUMBERS

- 10 SECOND INFERENCE TIME
  - $.01 API CALL

AFTER CACHING: THE RESULT

Extensions | Sr. Applied AI Engineer @ Za | CareerOps - Streamline your

jobs.ashbyhq.com/zapier/83ab14be-cd19-4091-84aa-2aa23833ab7d

zapier

Sr. Applied AI Engineer

Overview | Application

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DEV CareerOps - The Job Search &...

CareerOps careeropstest.091625@yopmail.com

Job | Connect

Saved: 0
Captures: 1

Capture | Save | Clear

Job Information

Role Glance
Role Glance

Job Title
Job Title

Company
Company

Salary
Salary

Location & Type

Location
Location

Employment Type
Employment Type

Location Type
Location Type

Job URL
Job URL

Dates

Posted Date
Posted Date

Due Date
Due Date

AFTER CACHING: THE RESULT IN NUMBERS

- MILISECOND RESPONSE TIME
- ALL SUBSEQUENT CALLS ARE ESSENTIALLY FREE

THE SOLUTION: THREE-LAYER CACHE

```
Layer 1: Local Cache (Redis) - $0.00001/query
     ↓ (miss)
Layer 2: Vector DB (Pinecone) - $0.0001/query
     ↓ (miss)
Layer 3: LLM (GPT-4) - $0.10/query
```

MOST QUERIES NEVER REACH LAYER 3

STRATEGY 1: EXACT MATCH CACHE

HOW IT WORKS:

- USER ANALYZES SAME DOCUMENT + PROMPT
- CACHE KEY: `doc_id + prompt`
- "JOBLISTING123 + SUMMARIZE" → CACHED RESULT
- HIT = RETURN INSTANTLY (<1MS)

BEST FOR: REPEATED DOCUMENT ANALYSIS, SAME REPORTS

STRATEGY 2: PRE-HYDRATION

PROACTIVE CACHING (USING CHEAPER MODELS):

1. ANALYZE YOUR LOGS → FIND TOP QUERIES
2. GENERATE RESPONSES DURING OFF-PEAK HOURS
3. USE CHEAPER MODELS (GPT-3.5) FOR BATCH PROCESSING
4. LOAD CACHE BEFORE USERS WAKE UP
5. FIRST-TIME USERS GET INSTANT RESPONSES

BEST FOR: PREDICTABLE QUESTIONS. ONBOARDING. DEMOS

STRATEGY 3: VECTOR SIMILARITY CACHE

HOW IT WORKS:

- USER ASKS: "HOW DO I CHANGE MY PASSWORD?"
- CONVERT TO VECTOR EMBEDDING (~$0.0001)
- SEARCH FOR SIMILAR VECTORS (>85% MATCH)
- "PASSWORD RESET" = 94% SIMILAR → RETURN CACHED

BEST FOR: VARIATIONS OF SAME INTENT

REAL CODE (SIMPLIFIED)

```
class SmartCache:
    def get_response(self, query):
        # Try Redis first
        if cached := self.redis.get(query):
            return cached

        # Try vector similarity
        embedding = get_embedding(query)
        if similar := self.vector_db.query(embedding, threshold=0.85):
            return similar.response

        # Last resort: expensive LLM
        return call_llm(query)
```

THE PROJECTED RESULTS

BEFORE: $1,650/MONTH, 3-5 SECOND RESPONSES
AFTER: $165/MONTH, <100MS RESPONSES

90% COST REDUCTION

50X FASTER

COMMON PITFALLS

1. MEASURE BEFORE OPTIMIZING
2. CHOOSE THE RIGHT TTL
3. START WITH 0.8 SIMILARITY THRESHOLD
4. VERSION YOUR CACHE ON MODELS/PROMPTS/CONTEXT UPDATES

QUICK WINS YOU CAN DO TODAY

1. LOG YOUR LLM CALLS (30 MINS)
2. FIND YOUR TOP 10 QUERIES (1 HOUR)
3. CACHE THOSE 10 (2 HOURS)
4. SAVE 30% BY TOMORROW

LET'S CONNECT

I'M BUILDING THIS NOW. WANT TO COMPARE NOTES?

EMAIL: CHRISMCDERMUT@GMAIL.COM
PROJECTS: CAREEROPS.COM + USEINFLOW.IO
GITHUB: CHRISMCDERMUT
WEBSITE: CHRISMCDERMUT.COM
LINKEDIN: /IN/CHRISMCDERMUT

Q&A TIME

RESOURCES

HENRY SHI'S AI CRASH COURSE HTTPS://GITHUB.COM/HENRYTHE9TH/AI-CRASH-COURSE
BOOK: ALEX XU'S SYSTEM DESIGN INTERVIEW I + II
LEARNING PLATFORM: PLURALSIGHT.COM + TRYSEXPONENT.COM
CERTS: AWS DEVELOPER AWS SOLUTIONS ARCHITECT

REMEMBER

EVERY CACHED QUERY IS RUNWAY EXTENDED

THANK YOU!