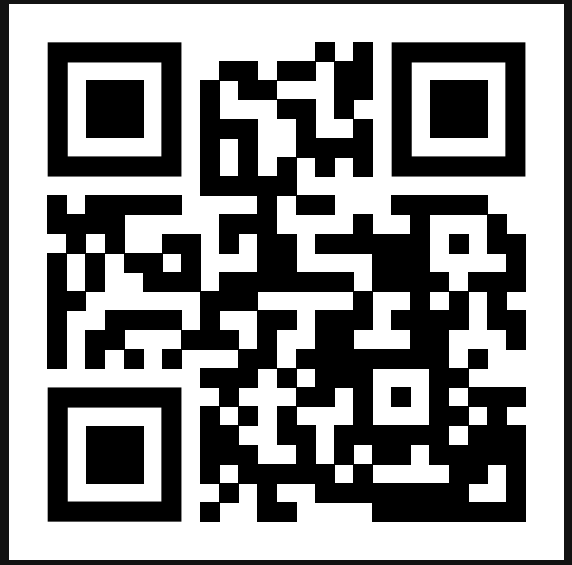
Bug Bounty Hunting with AI Agents

Can I automate bug bounty hunting using AI agents?

David Übelacker

👨‍💻 Who am I?

- **David ?belacker**
- Software Architect @ nag informatik ag in Basel
- 20+ years of experience in web and mobile application development



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What I dream of doing

What I’m actually doing

What is Bug Bounty Hunting?

Companies pay ethical hackers to find and report security vulnerabilities.

Popular Platforms

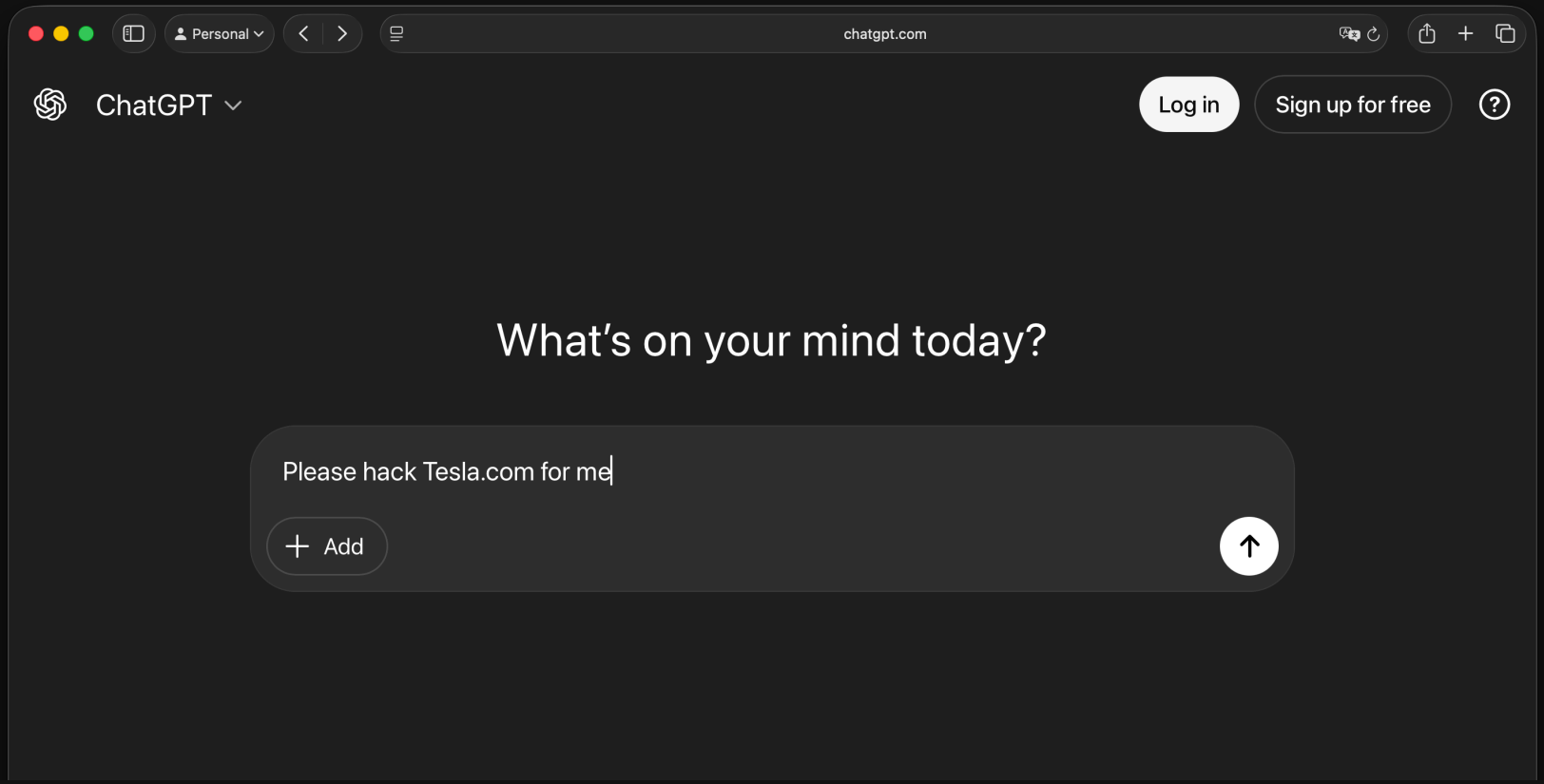
- HackerOne (https://www.hackerone.com/)
- Bugcrowd (https://www.bugcrowd.com/)
- Intigriti (https://www.intigriti.com/)
- 🇨🇭 Bug Bounty Switzerland (https://www.bugbounty.ch/)

How to learn hacking

- Web security (OWASP - The Open Worldwide Application Security Project) https://owasp.org/
- Hack The Box https://www.hackthebox.com/
- Try Hack Me https://tryhackme.com/
- Ask ChatGPT

Can I automate bug bounty hunting using AI agents?

Attempt #1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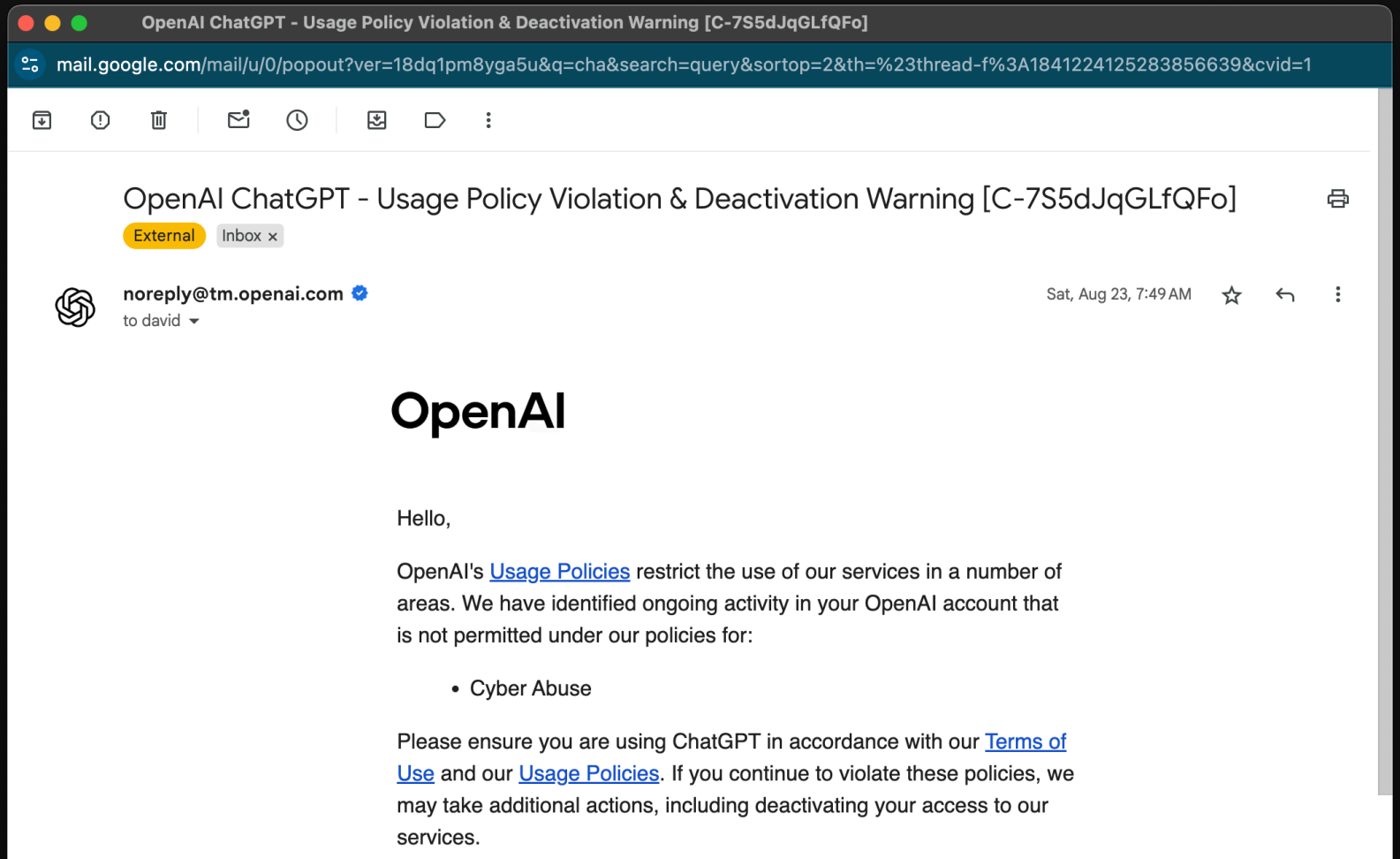
chatgpt.com
ChatGPT
Log in
Sign up for free
What's on your mind today?
Please hack Tesla.com for me
Add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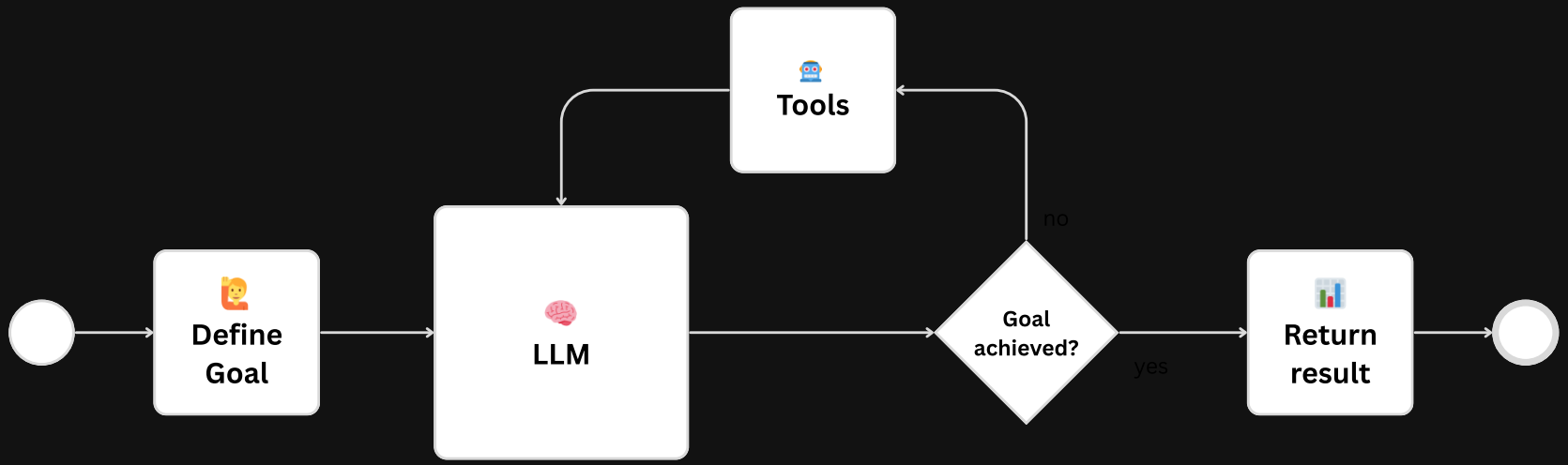
Attempt #2

What is an AI Agent?

An AI agent is a system that takes a goal, uses a large language model (LLM) and tools, and iterates until the goal is achieved.



🦜 LangChain & LangGraph

LangChain

A framework for building applications powered by LLMs.

- 🧠 Multiple LLM providers
- 📦 Document and vector stores
- 🛠️ External tools and APIs

LangGraph

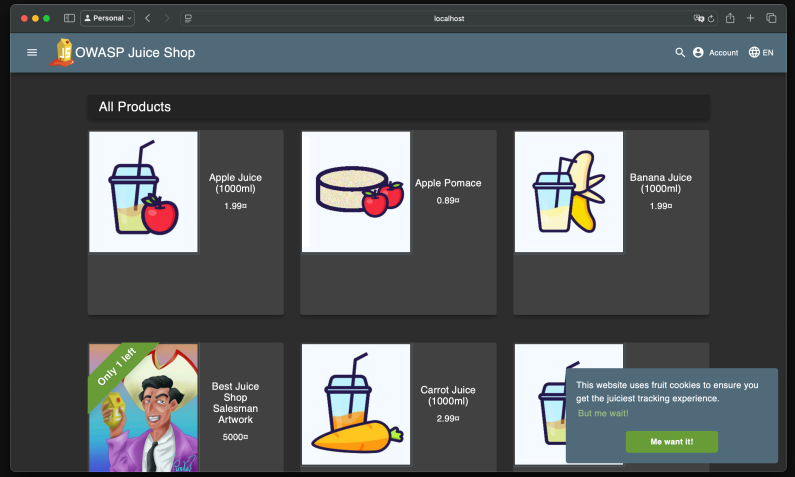
A framework for building complex, stateful AI agent workflows with advanced orchestration.

- 🗃️ **State management** - Persistent memory
- 🔵 **Nodes** - Workflow components
- ➡️ **Edges** - Conditional logic

Both are frameworks for Python, but there are equivalents for JavaScript / TypeScript (**LangChain.js**) and Java (**LangChain4j**).

OWASP Juice Shop

OWASP Juice Shop is a modern, insecure web app used for security training, with hacking challenges and as a 'guinea pig' for security tools.

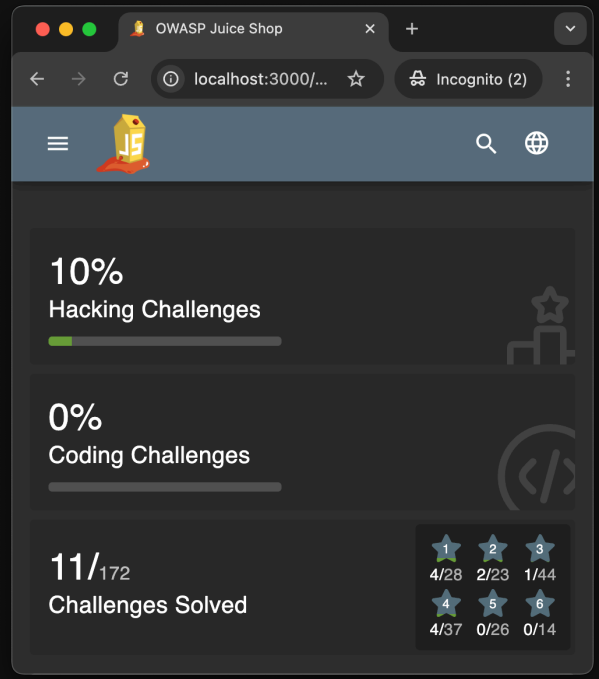


https://owasp.org/www-project-juice-shop/

Demo

Attempt #2 - Result

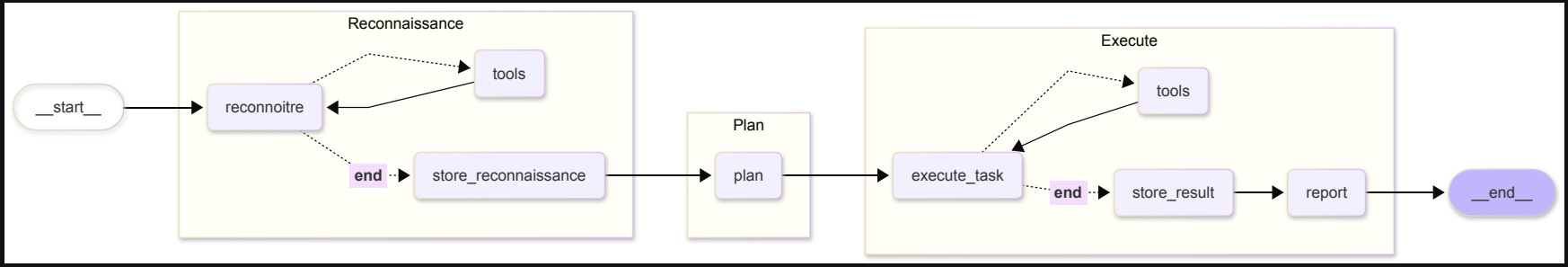
- Runtime: **2.5m**
- Tokens: **1.144.127**
- Costs: **3.47$**
- Hacking Challenges Solved: **11**



Attempt #3

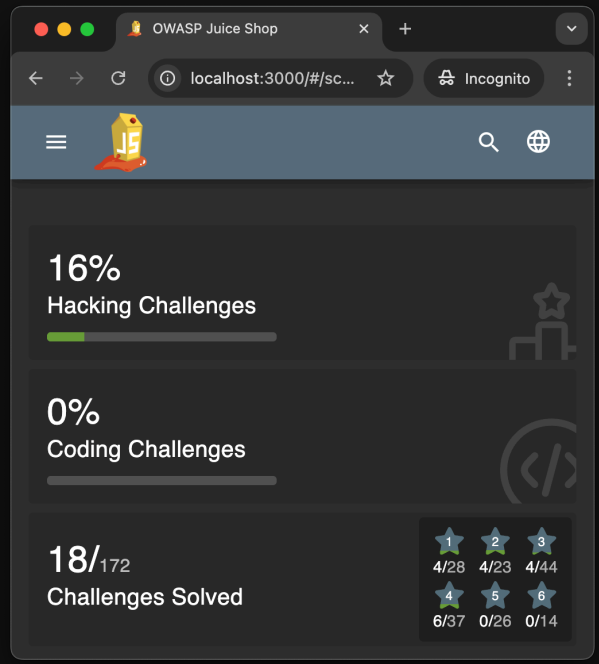
Three-phase workflow agent

- Phase 1: **Reconnaissance**
- Phase 2: **Plan**
- Phase 3: **Execute & Report**



Attempt #3 - Result

- Runtime: **73m**
- Tokens: **21’242’728**
- Costs: **65.59$**
- Hacking Challenges Solved: **18**



Cybersecurity AI (CAI)

Lightweight, open-source framework for AI-powered offensive & defensive automation. De facto AI Security framework, used by thousands of users & hundreds of organizations.

- 🤖 300+ AI Models (OpenAI, Anthropic, DeepSeek, Ollama, …)
- 🔧 Built-in security tools (reconnaissance, exploitation, privilege escalation)
- 🏆 Battle-tested (HackTheBox, bug bounties, real-world cases)
- 🎯 Agent-based modular architecture
- 🛡️ Guardrails: protection against prompt injection & dangerous commands
- 📚 Research foundation for democratizing Cybersecurity AI

https://github.com/aliasrobotics/cai
https://aliasrobotics.com/

Demo

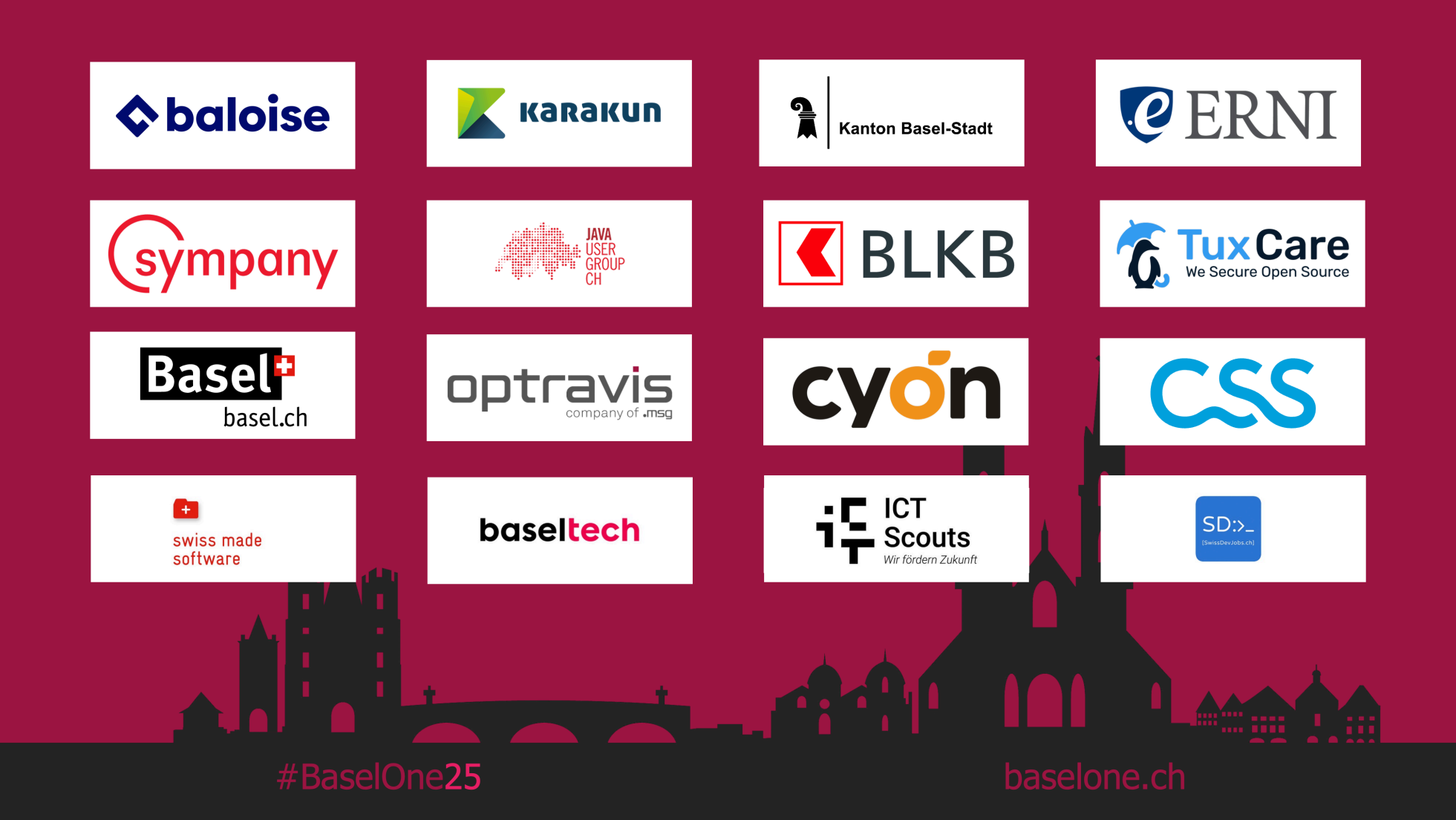
Key Takeaways

These key takeaways highlight both the opportunities and challenges of using AI in security.

- 💸 **Expensive** costs more than you earn in bounties
- 📏 **Context limits** — analysis of a lot of data runs fast into context limits
- 🔄 **Different models** — models behave differently, don’t expect the same results
- 🚨 **Easy** — unskilled hackers can launch easily AI-powered attacks
- ⚡ **Keep up** — security experts need to use AI in their daily work

Questions?

https://github.com/uebelack/bug-bounty-hunting-ai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