

BUILDING AI PRODUCTS

LinkedIn Learning Professional Certificate

TikTok Creator Intelligence

A Privacy-First AI Analytics Tool for Independent Creators

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Executive Summary

TikTok Creator Intelligence is a privacy-first, AI-powered analytics tool built for independent TikTok creators. The tool connects directly to TikTok's Display API via OAuth, pulls per-video performance metrics, and uses Claude (Anthropic's AI) to generate plain-English insights and recommendations — all running locally on the creator's own machine.

No data is stored. No credentials are shared. Nothing is transmitted to third-party servers. This privacy-by-design architecture is the core product differentiator in a market where every competing tool requires creators to surrender their data to someone else's database.

The Problem in One Sentence

TikTok creators have data but no insight — and every tool that offers insight requires them to give up their privacy.

The Business Problem

Who This Is For

Independent TikTok creators — accounts with 1,000 to 100,000 followers — who are trying to grow their audience, improve their content, and eventually monetize. This segment is dramatically underserved by existing analytics tools, which are built either for enterprise brands or require creators to compromise their data privacy.

The Core Pain Points

1. TikTok's native analytics are shallow

TikTok Studio provides basic metrics — views, likes, shares — but offers no narrative, no pattern analysis, and no actionable recommendations. Creators see numbers but don't know what to do with them. The platform also siloes data across seven separate export files, requiring manual downloads for each one.

2. The creator workflow is mobile-first

Most independent creators manage their TikTok presence entirely from their phone. Existing analytics tools that require desktop CSV exports with manual date ranges, zip file extraction, and file navigation are functionally unusable for this audience. The friction is prohibitive.

3. Third-party tools are a privacy liability

Tools like TokPortal and similar platforms require creators to authenticate their TikTok account through a third-party server, effectively handing over access to their account data. In an era of routine data breaches, this is an unacceptable trade-off that many creators are not making consciously.

Real Data, Real Problem

During development, the @morning_gist TikTok account (Star Trek TOS humor, 3,870 followers) generated over 150,000 views in 60 days but gained only 313 net followers — a 0.2% follow conversion rate. Without analytics, this problem would have been invisible. With the right tool, it becomes a specific, solvable problem.

The Solution

Product Overview

TikTok Creator Intelligence is a command-line tool written in Python. The creator runs a single command in their terminal. A browser window opens to TikTok's official OAuth login. They tap Allow. The terminal fetches their video metrics via the TikTok Display API and generates a full AI analysis using Claude — all within about 30 seconds.

The User Experience

#	Step	What Happens
1	Run the tool	Type <code>python3 analyze.py</code> in the terminal
2	Authorize	Browser opens to TikTok login — one tap to approve
3	Data fetches	Tool pulls up to 30 videos of metrics via the Display API

4	Metrics display	Clean table of top videos with engagement rates appears
5	AI analysis	Claude generates 6 insights with specific numbers and recommendations
6	Done	Session ends — no data stored, no credentials retained

What the AI Analysis Produces

After fetching the creator's data, Claude analyzes patterns across all videos and generates a structured report including:

- Engagement rate trends and what's driving them
- Best and worst performing content with specific hypotheses about why
- Optimal posting time recommendations based on actual performance data
- Title and description pattern analysis
- Monetization readiness assessment — whether the account is approaching brand deal thresholds
- A single highest-leverage recommendation for the next 30 days

Privacy-by-Design Architecture

Privacy is not a feature added to this product — it is the foundational architectural decision that shapes every technical choice. This directly addresses the most significant unmet need in the creator analytics market.

Third-Party Analytics Tools	TikTok Creator Intelligence
X Credentials stored on external server	✓ OAuth token held in memory only — never written to disk
X Your data in their database	✓ Data processed locally, deleted when session ends
X Unknown data retention policies	✓ No retention — nothing to retain
X Potential breach liability	✓ Nothing to breach
X Sells aggregate data to third parties	✓ No data leaves the creator's machine
X Requires account re-authentication	✓ Fresh OAuth each session by design

Technical Implementation

Technology Stack

Component	Technology & Purpose
Language	Python 3.9+
Authentication	TikTok OAuth 2.0 with PKCE (Proof Key for Code Exchange)
Data Source	TikTok Display API — per-video metrics and account stats
AI Layer	Anthropic Claude (claude-sonnet-4-6) via the Messages API
Terminal UI	Rich library — formatted tables, progress spinners, color output
Local Server	Python HTTPServer — captures OAuth callback on localhost:8888
Dependencies	requests, anthropic, rich — all standard, no exotic packages

Key Technical Decisions

PKCE Authentication

The tool implements PKCE (Proof Key for Code Exchange), TikTok's required security protocol for web OAuth flows. A cryptographic code verifier is generated locally, hashed, and sent with the authorization request. The original verifier is used to prove authenticity during token exchange — ensuring the OAuth flow cannot be intercepted or replayed.

Local Callback Server

Rather than requiring a deployed web application, the tool spins up a lightweight HTTP server on localhost port 8888 for the duration of the OAuth flow. It captures TikTok's authorization code, then shuts down immediately. This is the architectural choice that makes a fully local experience possible — no hosting required.

Stateless by Design

Every session starts fresh. No access tokens are written to disk, no analytics data is cached, and no user preferences are stored between runs. This is a deliberate privacy choice, not a limitation — it means there is no persistent data store to secure, audit, or breach.

Real-World Validation

This tool was built and tested against a real TikTok account: @morning_gist, a Star Trek TOS humor account posting daily dad jokes featuring Kirk, Spock, and Bones. The account provided both the inspiration for the product and the live data used for development and validation.

Insights Generated From Real Data

Finding 1 — Video Titles Drive 10x Performance Difference

Videos with descriptive titles (e.g., "Humor. It's good for morale.") received 81,730 views. Videos with hashtag-only titles (#startrek #dadjokes) received 8,289 views during the same period. The AI correctly identified this pattern and flagged it as the highest-leverage content change available.

Finding 2 — Follow Conversion Rate Was Invisible Without Analytics

The account generated 150,000+ views over 60 days but gained only 313 followers — a 0.2% conversion rate. TikTok Studio displays these numbers in separate screens with no connection between them. The tool surfaces this as a specific, named problem with a concrete recommendation.

Finding 3 — Audience Demographics Informed Profile Strategy

Data showed 74% male audience, 69% US-based, with strong engagement on 1960s-70s cultural references (Johnny Carson, Don Rickles). This informed a complete profile rebrand: new account name ("Dammit Jim It's Funny"), updated bio, and avatar change to the most-commented character (Bones).

Market Opportunity

The creator economy is large and growing, but analytics tooling remains bifurcated: enterprise platforms built for brands, and free tools that monetize creator data. The privacy-first segment is essentially unserved.

Target Segments

- Independent creators with 1K–100K followers seeking growth intelligence
- Privacy-conscious creators who have declined third-party tools on principle
- Creators approaching monetization thresholds who need data to make the case to brands
- Agencies managing creator rosters who need client data to stay client-side

Competitive Differentiation

Existing analytics tools compete on feature breadth. TikTok Creator Intelligence competes on trust. In an environment where data breaches are routine and creators are increasingly aware of how their data is used, a tool that processes everything locally and stores nothing is a fundamentally different value proposition — not a tradeoff.

Enterprise AI Framework Application

This project was developed as the capstone for the Building AI Products: Understanding the Workflow Professional Certificate by LinkedIn Learning. It applies the course framework across all stages of AI product development.

Framework Stage	Application in This Project
Problem Definition	Grounded in real creator pain: shallow analytics, mobile UX friction, privacy risk. Validated against actual account data.
User Research	Used own TikTok account (@morning_gist) as live test case. Discovered the 7-file export UX problem through direct experience.
AI Integration	Claude (Anthropic API) generates natural language insights from structured metrics data. AI adds the “so what” layer the raw data lacks.
Privacy & Ethics	Privacy-by-design as core architecture, not afterthought. Local processing eliminates the primary ethical concern in creator data tools.
Product Iteration	Pivoted from browser-based CSV dashboard to CLI tool when UX friction analysis showed CSV workflow was unusable for real creators.
Deployment Thinking	Terminal tool addresses CORS/hosting constraints while delivering a compelling demo. Architecture supports future API-first mobile expansion.

Next Steps & Future Development

Near Term

- Complete TikTok developer app registration and resolve sandbox access for live demo
- Add historical trending — run the tool daily and track metrics over time in a local SQLite file
- Export report to PDF from the terminal for sharing with collaborators or brand partners

Medium Term

- Mobile companion app — OAuth flow works on mobile; a lightweight app could deliver the same privacy-first experience natively
- Multi-account support for creators or agencies managing more than one TikTok profile
- Monetization readiness score — a single number that tracks progress toward brand deal thresholds

The Bigger Vision

Every major social platform has the same analytics problem: data siloed, insights absent, privacy traded away for convenience. The architecture built here — local OAuth, local processing, AI insight layer — is platform-agnostic. Instagram, YouTube, and LinkedIn all have creator APIs with the same opportunity.

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