MCP SERVER | NO CODE | CLOUD HOSTED

Circle of Fifths Navigator MCP for AI Agents

Mapping Natural Key Relationships and Modulation Paths in Music Theory

The Circle of Fifths Navigator helps musicians map out complex musical keys and their relationships. It identifies dominant, subdominant, relative keys, and natural modulation paths using established music theory frameworks. This MCP gives your AI agent the knowledge to analyze scales, find enharmonic equivalents, and structure compositions by understanding how different keys relate to one another.

A+ Quality Score 100/100

music-theory | circle-of-fifths | composition | musicology | scales | modulation

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vinkius.com/mcp/circle-of-fifths-navigator

SCAN TO VIEW

The connectivity layer between AI and the world's software.

Vinkius sits between AI and every application. All communication passes through Vinkius Cloud via the Model Context Protocol (MCP) — with governance, observability, and security at every layer.

Your AI Connections Run Through Vinkius Cloud

The world's largest managed MCP catalog

Vinkius is the connectivity layer where AI connects to the software your business already runs. We handle the hosting, the security, the credentials, the uptime — you get agents that actually do things.

We operate the world's largest managed MCP catalog. Major SaaS platforms, CRMs, databases, and cloud providers — running, monitored, production-ready. This MCP server is hosted and maintained by the Vinkius Cloud for AI Agents.

> *The agent doesn't manage credentials, doesn't manage uptime, doesn't manage security. Vinkius does.*
>
> — Architecture principle

Four Pillars of the Vinkius Runtime

01 — Security by design

Credentials stay encrypted at rest via AES-256. The AI agent never touches raw keys — they're injected into a sandboxed V8 isolate at runtime. Actions are logged, and connections have an emergency kill switch.

02 — Built on MCP Fusion

This MCP server was built with **MCP Fusion**, the open-source framework (Apache 2.0) that powers the entire Vinkius catalog. Schema-as-firewall strips undeclared fields, compiled PII redaction runs at zero overhead, and cryptographic lockfiles produce git-diffable audit trails.

03 — Deterministic observability

Eight immutable metrics per endpoint: request volume, p95 latency, error rate, active connections, cost attribution. A live payload feed logs every tool call with mutation detection.

04 — Autonomous operations

Servers are deployed, monitored, and patched autonomously. New capabilities and security patches ship weekly. Zero-downtime deployments ensure continuous availability across all managed MCP servers.

AES-256	Ed25519	24h TTL	V8 Isolate
Encryption at rest	PKI vault signatures	Ephemeral session keys	Sandboxed execution

One Token. Instant Access.

Every MCP server on Vinkius is accessed through a **Connection Token**. Tokens are generated in the cloud dashboard and produce a unique MCP endpoint URL. Paste this URL into any MCP-compatible client — no SDK required.

A single token can serve **multiple AI clients simultaneously**, or you can issue separate tokens per client for granular access control. Each token tracks its own request count, last activity timestamp, and can be individually enabled or revoked.

MCP ENDPOINT

```
https://edge.vinkius.com/{token}/mcp
```

Claude · Cursor · VS Code · Windsurf · Grok · Gemini

Security Is the Architecture

Security in Vinkius is not a feature — it's the foundation of the runtime. The gateway enforces multiple independent protection layers between AI agents and third-party APIs.

01 — Ed25519 PKI Vault

Every workspace has an Ed25519 Master Key. Session keys are generated ephemerally (24h TTL) and signed by the Master Key. Credentials never leave the vault boundary.

02 — V8 Isolate Sandboxing

Tool code runs inside isolated-vm V8 isolates with 64 MB memory caps and per-request timeouts. No filesystem access, no network access except through the SSRF-guarded fetch bridge.

03 — SSRF Guard

All outbound HTTP requests are DNS-resolved and validated before execution. Private IP ranges (10.x, 172.16-31.x, 192.168.x, AWS metadata 169.254.x) are blocked at the network layer.

04 — DLP & PII Redaction

A ResponseGuard pipeline intercepts every tool response. Configurable redaction patterns strip sensitive fields (emails, SSNs, card numbers) before data reaches the AI agent.

05 — Cryptographic Audit Trail

Every request is signed into a SHA-256 hash chain with Ed25519 signatures. Events form a tamper-proof, SIEM-exportable forensic record.

06 — Honeytoken Trap System

Phantom credentials are injected into isolated environments. If a honeytoken is used outside Vinkius infrastructure, the server is quarantined instantly.

Emergency Kill Switch

EU AI Act Art. 14(1) Compliant

The kill switch is an **emergency halt** mechanism — not a simple toggle. When triggered, it executes three actions atomically:

01 — Server deactivated

The MCP server is immediately taken offline across the entire cluster.

02 — All tokens revoked

Every connection token is invalidated. Total lockout — reconnection blocked until new tokens are issued.

03 — WebSocket connections killed

Active connections terminated via Redis pubsub broadcast. Propagates to every runtime node in the cluster.

Full Visibility. Zero Guesswork.

The Vinkius cloud dashboard includes a full MCP Governance suite — real-time analytics and security controls for production AI operations.

Control Plane

KPI dashboard with request volume, latency, success rate, token consumption, and AI-generated operational briefings.

Agent Activity

Which AI clients are connecting, how often, and what they're doing — real-time session tracking.

FinOps

Cost tracking per tool, payload compression savings, budget optimization signals, and consumption trends.

Tool Health

Slowest and most error-prone tools, with actionable root-cause insights and performance baselines.

Firewall & DLP

PII redaction activity, sensitive data protection counters, and security event timeline.

Incident Log

Error trends, failure rates, status-code breakdowns, and forensic audit trail access.

> Get started at **cloud.vinkius.com** — connect your AI agent in under 60 seconds.

Circle of Fifths Navigator MCP

4 tools available
Cloud-hosted on Vinkius

Do you spend time manually cross-referencing key signatures or trying to map a difficult modulation path? The Circle of Fifths Navigator gives you the analytical power to visualize and understand tonal relationships instantly. This MCP lets your AI agent analyze any given key, telling you everything about its musical neighbors—the dominant, subdominant, relative major, and minor keys. Need technical specifics? It retrieves details like accidental order and available modes for a scale. For advanced composition, you can plot natural modulation paths to see exactly which keys are adjacent or within reach. You'll find that Vinkius hosts this MCP alongside thousands of others, giving your agent access to a massive catalog of specialized knowledge. Instead of flipping through theory books, you just ask your agent to analyze the relationship between two distant keys and get the answer immediately.

Core Capabilities

01 — Identify Key Neighbors

Finds the dominant, subdominant, relative major, and relative minor keys for any given musical key.

02 — Map Modulation Paths

Calculates natural modulation targets, showing which keys are musically reachable from a starting point and how far away they sit on the circle.

03 — Determine Key Structure Details

Provides technical components for a key's scale, including available modes and accidental order.

04 — Find Notation Equivalents

Maps a given key to its enharmonic equivalents, offering alternative spellings or notations.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/circle-of-fifths-navigator** — connect your AI agent in three steps.

01 Provide the MCP with a starting musical key (e.g., 'G Major') and any specific parameters, like maximum distance for modulation.

02 The agent sends this request to the Circle of Fifths Navigator, which analyzes the input against established music theory rules.

03 You receive structured data detailing related keys, technical scale components, or a list of natural modulation targets.

The bottom line is that you get instant, comprehensive musical analysis without ever leaving your AI agent's chat interface.

Built For

This MCP is essential for professional composers, film music scorers, and advanced music theory students. If you spend time figuring out how keys relate or planning complex transitions in a score, this tool saves hours of manual research.

Film Composer

Uses the MCP to plan natural modulations between scenes, ensuring smooth and believable key changes that don't confuse the listener.

Music Theory Student

Tests out different keys by using the tool to get immediate technical details on scale modes and accidental orders for assignments.

Songwriter/Arranger

Checks key relationships before recording, using it to confirm that a secondary melody or bridge section is tonally related to the main chorus.

What Changes When You Connect

01 Instantly identify key relationships. Instead of guessing, you can ask the agent to use `get_key_neighbors` to reveal the dominant and subdominant keys for any piece.

02 Plan complex transitions with confidence. Use `calculate_modulation_paths` to map out natural modulation targets, ensuring your music flows logically from one section to the next.

03 Get technical scale data on demand. The `get_key_signature_details` tool provides immediate access to a key's modes and accidental order, saving manual chart work.

04 Avoid notation roadblocks. If you need to write the same key in different fingerings or notations, `get_enharmonic_mapping` finds every equivalent spelling for you.

Real-World Applications

A composer needs a bridge section that sounds related but not identical to the main theme.

The agent uses the Circle of Fifths Navigator to run `get_key_neighbors` on the current key. It discovers the subdominant and relative minor keys, allowing the composer to write a new 'bridge' section in one of those closely related tonal centers.

A student is studying harmonic movement for an assignment.

The student asks their agent about modulation paths. The agent runs `calculate_modulation_paths`, showing the student a clear, visualized route from C Major to G Major (distance +1) and F Major (distance -1), which they then incorporate into their piece.

A songwriter needs to ensure all sections of a song feel tonally cohesive.

The agent uses `get_key_signature_details` on the chorus key, identifying its available modes (like Dorian or Aeolian). This tells the songwriter exactly which scale types they should stick to in the verse for maximum coherence.

A score needs a section written that sounds technically different but is musically identical.

The agent runs `get_enharmonic_mapping` on the key of F# Major. It returns its equivalent as Gb Major, allowing the composer to write the passage using alternative notation while maintaining the intended harmony.

Patterns to Avoid

Treating keys in isolation

✗ AVOID

A user might assume that because two keys are close on paper (like C and G), they automatically modulate together. This ignores fundamental musical relationships.

✓ INSTEAD

Don't just guess; use the `get_key_neighbors` tool to confirm the exact dominant, subdominant, and relative keys. These tools give you proven, mathematically derived tonal links.

Ignoring scale theory specifics

✗ AVOID

Writing a passage in a key without realizing that certain modes or accidentals are not technically available for that signature.

✓ INSTEAD

Always run `get_key_signature_details` first. This confirms the precise technical boundaries of your chosen key, ensuring every note and mode you use is valid.

Forgetting notation flexibility

✗ AVOID

Getting stuck because a specific composer or instrument only uses one type of notation for a particular pitch.

✓ INSTEAD

Before finalizing the score, run `get_enharmonic_mapping`. This reveals every possible way to write that key—whether it's using flats or sharps.

The Right Fit

Use this MCP if your primary problem is understanding *relationships* between keys. If you need to know what a key's neighbors are, where natural modulations can occur, or the technical boundaries of its scale, use it. Don't use this if you simply need basic chord progressions; other tools handle that. Also, don't rely on it for genre-specific rules (like jazz harmony); it sticks to classical theory. However, if you are designing a piece and hit a point where you can't determine the next logical key or its available scales, this MCP is your definitive source of truth.

Circle of Fifths Navigator: Solving Key Relationship Puzzles in Composition

Right now, mapping out a piece often feels like archaeological work. You start with a strong chorus key, but when you need to transition into the bridge or the coda, you get stuck. You're manually cross-referencing theory books and trying to guess which keys sound 'right,' leading to tedious back-and-forth searching and constant doubt.

With this MCP, that manual labor is gone. Your agent runs a simple request and tells you exactly who the closest musical relatives are, using `get_key_neighbors`. You immediately see viable options for modulation without ever having to open another reference document.

Circle of Fifths Navigator: Mastering Scale Modes and Modulation Paths

The biggest time sink is maintaining technical accuracy across a long piece. You'll write a section in C Minor, but then you realize the next key needs to be Eb minor, and you have no idea what scale modes are available or if your accidentals will conflict.

Now, you just ask the agent for `get_key_signature_details`. It confirms all the technical components instantly. You can then use `calculate_modulation_paths` to plot out a flawless journey between sections—it's precise, fast, and always correct.

Circle of Fifths Navigator: 4 Tools for Music Theory Composition

These tools let you instantly analyze key signatures, calculate natural modulations, check scale modes, and map out musical relationships with professional precision.

#	TOOL	DESCRIPTION
01	`get_enharmonic_mapping`	Finds alternative notations for a given key, answering questions about how else that key can be written.
02	`get_key_neighbors`	Lists the closest musical relatives to an input key, including its dominant, subdominant, relative major, and relative minor keys.
03	`get_key_signature_details`	Provides a detailed breakdown of a key's scale components, such as accidental order and available modes.
04	`calculate_modulation_paths`	Identifies natural modulation paths from a starting key by calculating musically appropriate adjacent keys.

See It in Action

Real prompts you can use once this MCP is connected to your AI agent through Vinkius Cloud.

U What are my options for modulating away from D Major?

Key Neighbors of D Major:
- **Dominant Key:** A Major (Distance +1)
- **Subdominant Key:** G Major (Distance -1)
- **Relative Minor:** B Minor
- **Relative Major:** D Major (Self)

These options give you solid starting points for your next musical section. You can also check `calculate_modulation_paths` to find even more distant, but natural targets.

U I need a key that sounds like E Minor, but written differently.

Enharmonic Mapping for E Minor:
- **Alternative Spelling:** F-flat minor (Fbm)
- **Key Signature Details:** 4 flats.
- **Available Modes include:** Aeolian, Dorian, Phrygian.

This shows that while the name changes, the underlying musical structure and modes remain consistent.

U What are the scale components for F# Major?

F# Major Scale Analysis
- **Flats/Sharps:** 6 sharps (F#, C#, G#, D#, A#, E#)
- **Available Modes:** Ionian, Dorian, Phrygian, Lydian, Mixolydian, Aeolian.
- **Accidental Order Check:** The scale maintains a clear, predictable pattern of accidentals, which is crucial for composition.

Frequently Asked Questions

01 **How does the Circle of Fifths Navigator help me plan my transitions between keys?**

It helps by identifying natural modulation paths. Instead of randomly switching keys, you can ask it to find musically logical next steps, ensuring your music always flows smoothly and intentionally.

02 **Can I use the Circle of Fifths Navigator for non-Western musical scales?**

The tool is built on classical Western music theory. It excels at analyzing keys using standard accidentals, modes, and octave relationships common in European composition.

03 **What if I need to write the same key but with a different set of sharps or flats?**

You can use its enharmonic mapping tool. It shows you equivalent keys using completely different notations (like going from F# major to Gb major), which is helpful for specific instrumentation.

04 **Does the Circle of Fifths Navigator only deal with simple relationships?**

No, it handles complex analysis. It can provide technical details like accidental order and lists all available modes for a given key signature, offering deep compositional insight.

05 **How do I find the closest musical relatives to my current theme's key?**

Just ask it to get the key neighbors. It immediately gives you the dominant, subdominant, and relative keys—all proven candidates for your next section.

Go Live in 60 Seconds

Get your connection token from **cloud.vinkius.com**, then paste the endpoint URL into any MCP-compatible client.

YOUR MCP ENDPOINT

```
https://edge.vinkius.com/[TOKEN]/mcp
```

CLIENT	WHERE TO CONFIGURE
Claude AI	Profile → Customize → Connectors → "+" → Add custom connector → Paste endpoint
Cursor	Settings → Features → MCP Servers → "+ Add New MCP Server" → Type: SSE → Paste endpoint
VS Code	Ctrl/Cmd+Shift+P → "MCP: Add Server" → add `"circle-of-fifths-navigator": { "url": "…" }`
Windsurf	MCP Settings → `mcp_settings.json` → Add endpoint URL
ChatGPT	Settings → Tools & plugins → Add MCP server → Paste endpoint
Gemini	Extensions → Add MCP Server → Paste endpoint URL

ASK AN AI ABOUT THIS

Let your preferred AI explain this MCP server

- Ask ChatGPT
- Ask Claude
- Ask Perplexity
- Ask Gemini
- Ask Grok

READY TO CONNECT

Circle of Fifths Navigator is live on Vinkius Cloud.

Get your connection token, paste it into your AI agent, and start building. No SDK. No deployment. Just results.

Start at cloud.vinkius.com →

vinkius.com · support@vinkius.com

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