Synthesis - Intelligent Tab Manager

Transform Information Chaos into Structured Knowledge:
An enterprise-grade AI Research Assistant that synthesizes the entirety of the web—articles, search results, and videos—into actionable insights.
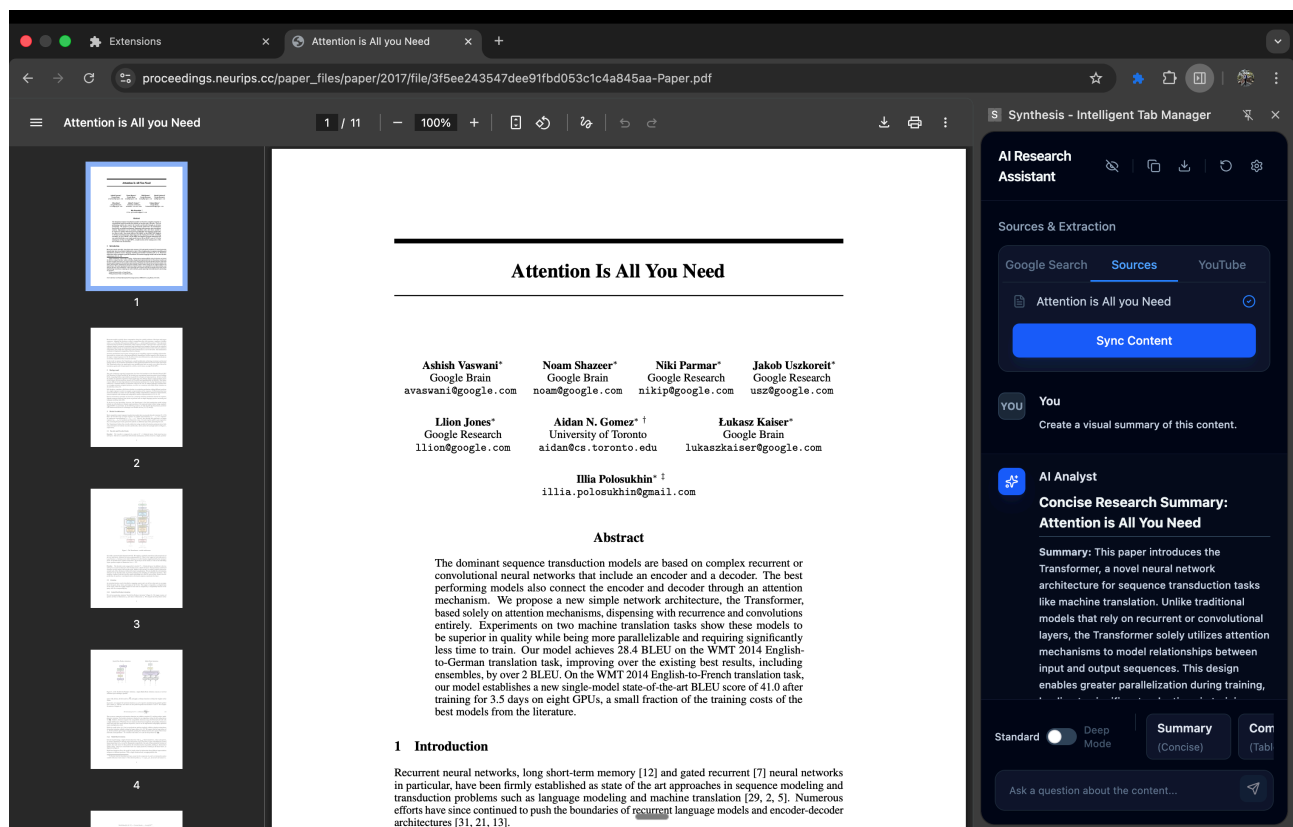
The Problem: Knowledge Fragmentation

In the modern research workflow, professionals are overwhelmed by tabs.
- Disconnected Data: You read an article, watch a YouTube video, and search Google separately. There is no unified context.
- Video is a Black Box: Valuable information is locked within hours of video content, unsearchable and unskimmable.
- Manual Synthesis: Users waste hours copying snippets into documents to construct a coherent picture.

The Solution: Unified Research Intelligence

Synthesis is a Chrome Extension that functions as your Personal AI Research Analyst. It does not merely manage tabs; it reads, watches, and comprehends them for you.

Key Capabilities

Universal YouTube Intelligence (Pro Feature): Unlock the knowledge contained within any video.
- **Native Transcripts:** Instantly extracts captions from supported videos.
- **AI Speech-to-Text (STT):** For videos without captions, Synthesis downloads the audio, processes it through a Cloudflare Worker, and utilizes Gemini to transcribe it with 99% accuracy.

- **Video Chat:** Pose questions directly to the video content ("What were the three key takeaways from the lecture?").

Integrated Deep Search: Eliminate tab switching.

- **Built-in Google Search:** Conduct research on new topics directly within the sidebar.
- **One-Click Context:** Instantly add search results to your context window for synthesis without opening new tabs.

Deep Synthesis Engine: Go beyond simple summaries.

- **Comparative Analysis:** "Create a table comparing the pricing of the five SaaS tools I have open."
- **Deep Research Mode:** Toggle "Deep Mode" for PhD-level insights, connecting dots between your YouTube videos and web articles.
- **Vision Capabilities:** Synthesis can "see" your screen to analyze charts, diagrams, and visual data on webpages.
- **Professional Exports:** One-Click Reports: Export your entire research session as a formatted PDF Report or Markdown file for immediate sharing.

Technical Architecture

Built with a scalable Hexagonal Monorepo Architecture designed for performance and maintainability.

Frontend (Chrome Extension):
- **Core:** React 18, TypeScript, Vite, CRXJS (Manifest V3).
- **UI/UX:** TailwindCSS, Shadcn/UI for a premium, accessible interface.
- **State:** Custom Hooks (`useSynthesis`, `useTabManager`) for reactive data flow.

Backend (Infrastructure):

- **Audio Proxy:** Cloudflare Worker (Edge Compute) to handle CORS-free audio extraction securely.
- **AI Model:** Google Gemini API (1.5 Flash/Pro) for low-latency, high-context reasoning.

Data Privacy & Security:

- "Bring Your Own Key" (BYOK): Zero data retention on our servers. API keys are stored locally in the user's browser (AES encrypted).
- **Environment Variables:** Pro builds secure keys at compile time, hiding complexity from the end user.
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