AI LAB by nvisia

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Spec-Driven Development in Action

Secure, Cost-Efficient Agentic Assistance

GOAL: Exploring spec-driven design in the Java space using real-world scenarios

When organizations turn to AI for faster code generation, governance quickly becomes the real challenge. Spec-Driven Development (SDD) flips the typical workflow; instead of coding first and documenting later, engineers start with an executable specification that acts as a single source of truth to drive design, implementation, and validation.

Our demo applications explore how this approach improves velocity, consistency, and alignment with business requirements compared to ad-hoc prompting. We also found additional benefits; specifications foster deeper ideation and more complete requirement analysis, centralized specs reduce friction and accelerate onboarding, and governance embedded in context enhances quality.

By automating component generation from formal specifications, SDD reduces ambiguity and speeds delivery, especially effective for complex, compliance-driven environments.

Highlights

- Spec-Driven Development
- Java Stack Implementation
- GitHub Spec Kit
- OpenSpec with Spring AI & Embabel
- GOAP (Goal-Oriented Action Planning)

Key Features

- Reduced hallucinations with spec-driven development
- Strong alignment with requirements
- Dynamic ideation through evolving specification
- Task-based model selection to optimize results
- Java-stack implementation using Embabel

Applicable Use Cases

- Engineering advanced enterprise solutions
- Rapid prototyping with governance
- Crafting AI applications with complex orchestration
- Providing auditable documentation of intended functionality
- Accelerating delivery in complex environments

Spec Kit OPENSPEC

Claude CODEX Hugging Face LM Studio

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Explore what happens when engineers get curious

The **AI Lab** is where nvisia's engineers and our clients experiment, explore, and build with the latest in AI and emerging tech. See real-world demos from our lab — not just ideas but functional innovations in:

- AI-powered software solutions
- Intelligent automation
- Data science & machine learning
- Custom AI integrations

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Engineering the Future with AI

Strategic Focus Areas

↘ Frameworks & Playbooks

Codifying reusable architectures and best practices for consistent, scalable AI delivery.

↘ Security & Compliance

Embedding data security, model integrity, regulatory alignment, and safe prompt engineering into every stage of the AI lifecycle.

↘ Human-in-the-Loop AI

Designing workflows where AI accelerates analysis and automation, while human oversight and expert review ensure accuracy, reliability, and real-world relevance.

↘ Responsible AI & Ethics

Creating principles, reviews, and tooling that ensure AI is transparent, fair, and aligned with organizational values.

↘ Driving Value

Prioritizing high-impact opportunities, measuring ROI, and ensuring AI initiatives deliver meaningful business outcomes.

↘ Improving Predictability

Using techniques such as Spec-Driven Development to enhance model accuracy, reproducibility, and trustworthiness.

Come Talk to Us

Ask questions, see the tech in action, or just chat with our team.
We're here to share what we've learned — and to learn from you too!

Real demos

Ready to scale

Built by engineers

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