

Humans + AI = A New Era of Development

AI as a Disruptive Force: Boosting Developer Efficiency and
Preparing for the Revolution

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Live Code Generation Demo

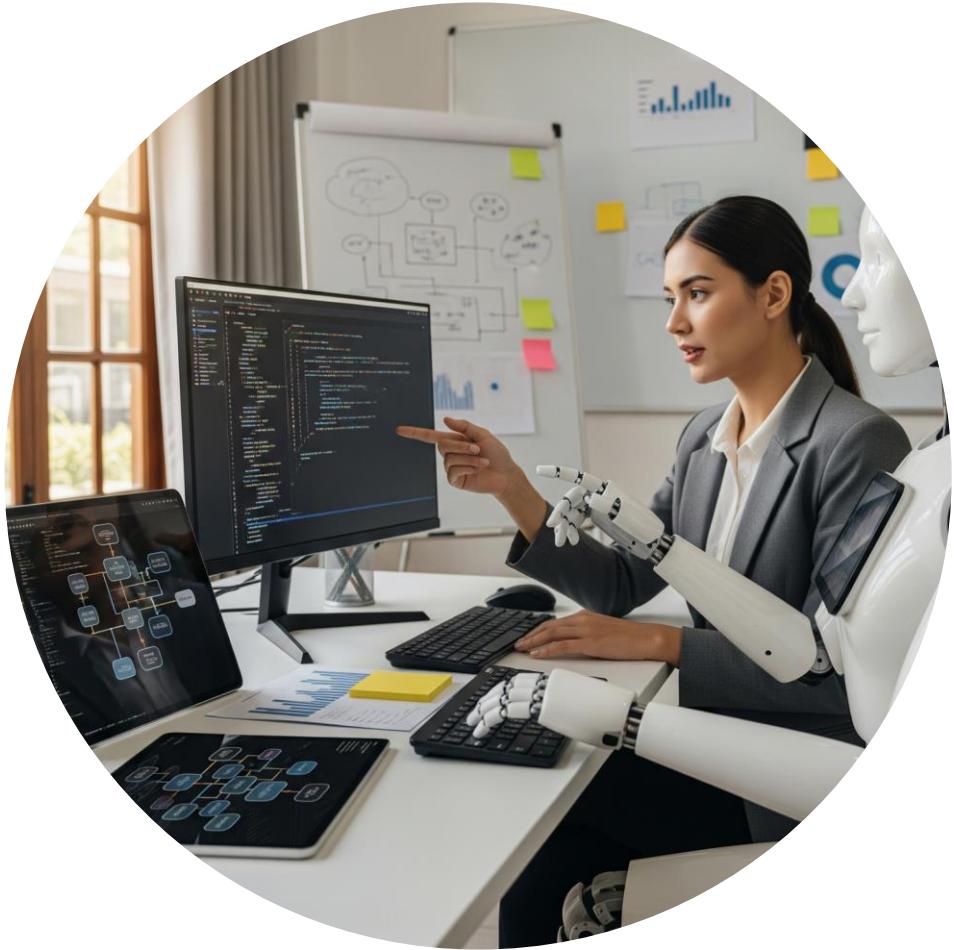
Before I present anything, let me illustrate what the AI can do!

- I will instruct the AI to create something while I'm presenting
- With a little luck, we may have something at the end of the presentation....
- Prompt:
 - Build a game in HTML that combines the ideas of Tetris and Space Invaders



AI's Efficiency Boost Today

- AI tools generate code, reducing boilerplate.
- AI assists with debugging and testing, saving time.
- Studies show significant developer productivity gains.
 - GitHub Copilot suggests code snippets, reducing boilerplate 50%
 - Productivity gain studies shows 1.2x-2x efficiency
 - Nielsen Norman Group 126%
- Advanced LLMs can achieve high efficiency increases.
- **My personal experience:**
 - 20x+



Example: Data Center Real-Time Processing

Requirements

- Configure Ignition (from Inductive Automation) to push MQTT Sparkplug messages from the cloud
- Set up managed MQTT broker in Azure
- Set up Confluent Kafka
- Develop a set of stream processors to:
 - Discover anomalies
 - Convert from Sparkplug to flattened structures ideal for Microsoft Fabric
 - ...

Efforts:

- One person, two days of development
- (14 days of waiting)...



River ML Environmental Anomaly Dashboard

Real-time SLA Monitoring & Threat Detection

How does River ML detect anomalies?

- What we analyze - Environmental readings - Temperature, humidity, airflow, pressure - Temporal patterns - Time of day, day of week, seasonal variations
- Location context - Zone-specific normal ranges and patterns
- Combined factors - Temperature-humidity ratios, trend analysis
- Why it's powerful - Online learning - Adapts to changing environmental patterns in real time - No historical data required - Learns normal patterns as it runs - Contextual awareness - Considers time, location, and seasonal factors - Adaptive thresholds - Automatically adjusts sensitivity based on patterns
- When we alert - Anomaly score - threshold (typically 0.7) with high confidence - Environmental values outside safe operating ranges - Unusual combinations of factors (e.g., high temp + low humidity) - Trending toward SLA breach conditions
- Key insight: We don't just look at absolute values - we detect patterns that deviate from learned normal behavior for each specific location and time context.

Status: DISCONNECTED | Last Update: 2025-06-01 15:23:00

Total Anomalies: 0 Critical Alerts: 0 High Risk: 0 Last Hour: 0 Latest Score: N/A

Active Alerts

No active alerts in the last 15 minutes

Analytics

Anomaly Scores Over Time

Environmental Parameters

Anomalies by Zone

Risk Level Distribution

Data Explorer

Graph CUSTOMIZE

Query 1 (0.02s)

FROM Search buckets metric _monitoring _tasks + Create Bucket

Filter device_class metric_name _field _measurement datatype sequence_number sparkplug.metrics value value_type

Search device_class tag value Search metric_name tag value Search _field tag values Search _measurement tag vs

View Raw Data Past 1h SCRIPT EDITOR SUBMIT

WINDOW PERIOD CUSTOM AUTO

Fill missing values AGGREGATE FUNCTION CUSTOM AUTO

mean median last

```
neos:~$ MATCH (n) RETURN n
+-----+
| id  |
|-----|
| 210 |
|-----|
| created_at |
|-----|
| "2025-05-01T02:50:53.918000000Z" |
|-----|
| device_class |
|-----|
| IA0202 |
|-----|
| last_seen |
|-----|
| "2025-05-29T07:33:07.193000000Z" |
|-----|
| metric_count |
|-----|
| 264961 |
|-----|
| name |
|-----|
| RP93-02E-3-2 |
|-----|
| path |
|-----|
| 00:RP93:IA0202:Block-00:RP93:RP93-02E-3-2 |
|-----|
| status |
|-----|
| ONLINE |
|-----|
| updated_at |
|-----|
| "2025-06-01T11:09:46.982000000Z" |
|-----|
| zone |
|-----|
| Block-02E |
+-----+
```

Example: Revamp of Yaktor

Context:

- From 2012 to 2015, SciSpike led an open source project called Yaktor
- Very ambitious project covering:
 - Two new languages
 - Several runtimes
 - Code generators
 - Document generators
- Original effort:
 - 5 top notch engineers 2 years
- Idea
 - Build a new version of the application including:
 - Runtime debugger/interpreter (Python)
 - Runtime in various languages (Rust, GoLang, C++, Python, JavaScript, ...)
 - Build graphical composer

Effort:

- One person, one week



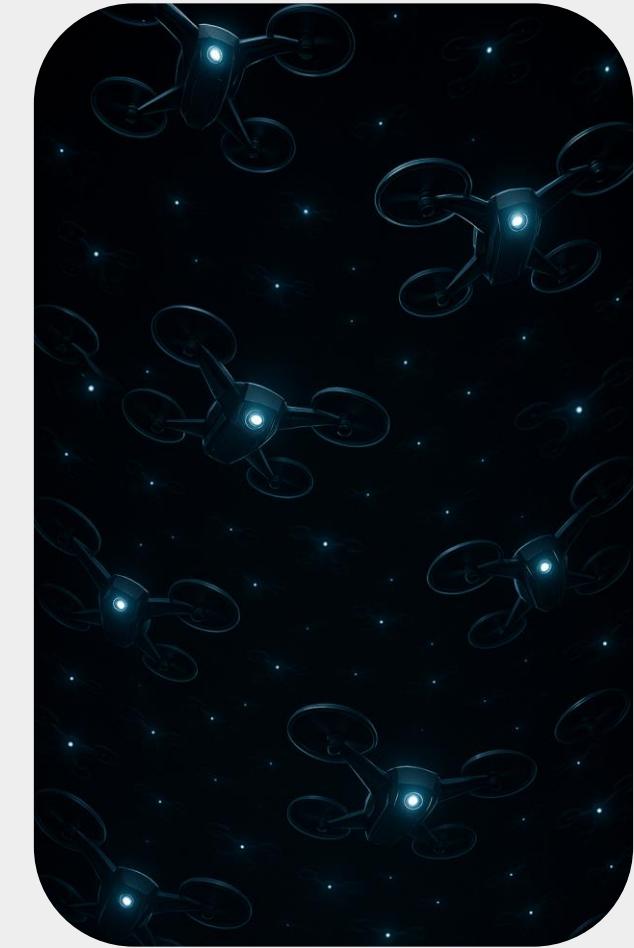
Example: Drone Swarm

Context:

- I had an idea that I could use Eclipse Zenoh as an underlying collaboration protocol for Yaktor
- An ongoing project involving drone operation
- End result:
 - Declarative swarm algorithms (e.g., search and rescue, find and swarm, ... and about 15 other algorithms)
 - Complete 3D simulated environment in Webots
 - Extremely small runtime written in Rust
 - Every drone is autonomous but work as a swarm with automatic recovery in case of loss

Effort:

- One person, one weekend

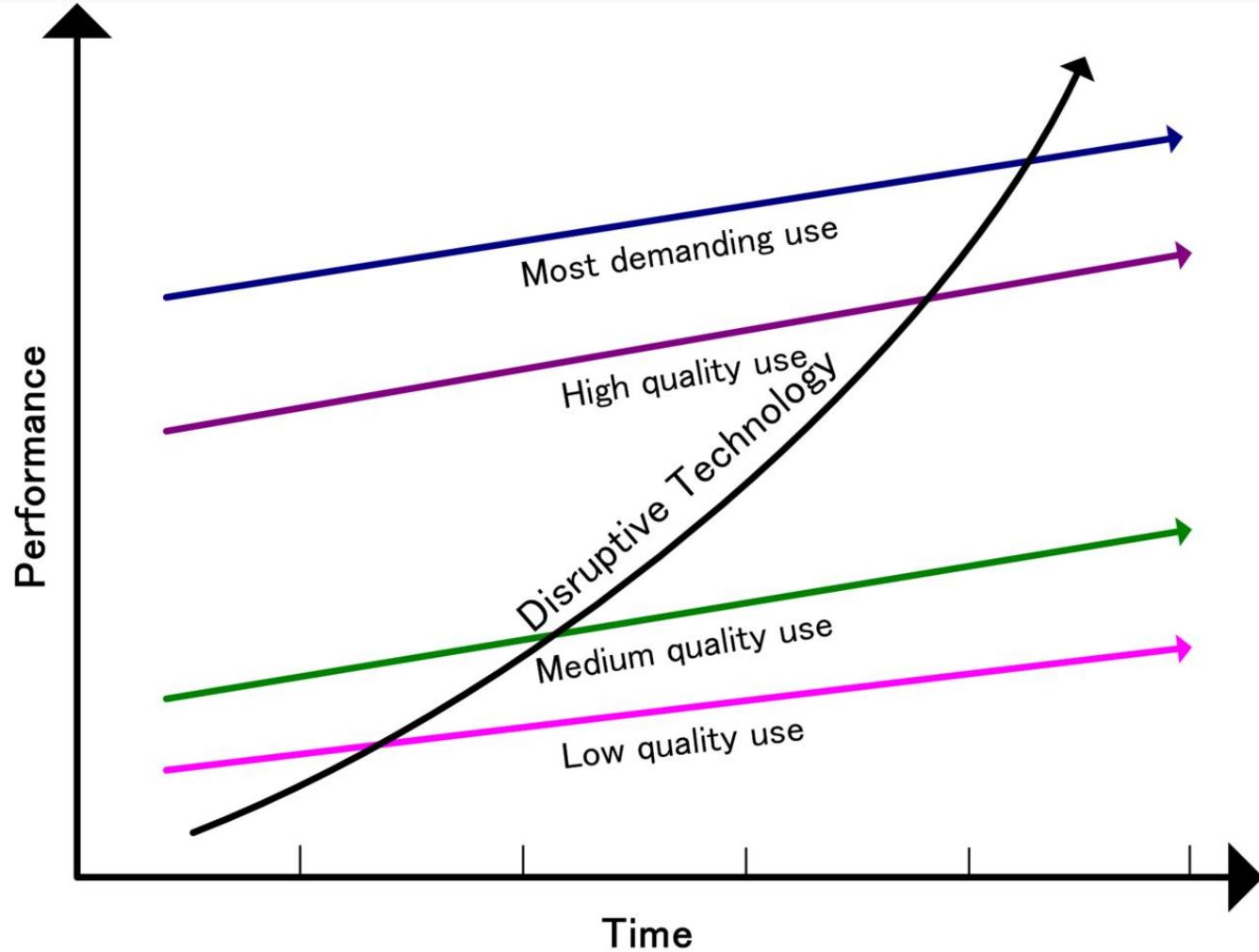
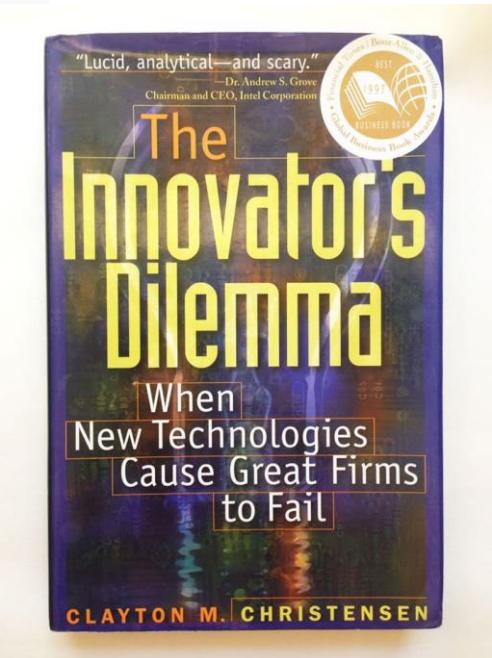


My 20x+ AI Experience

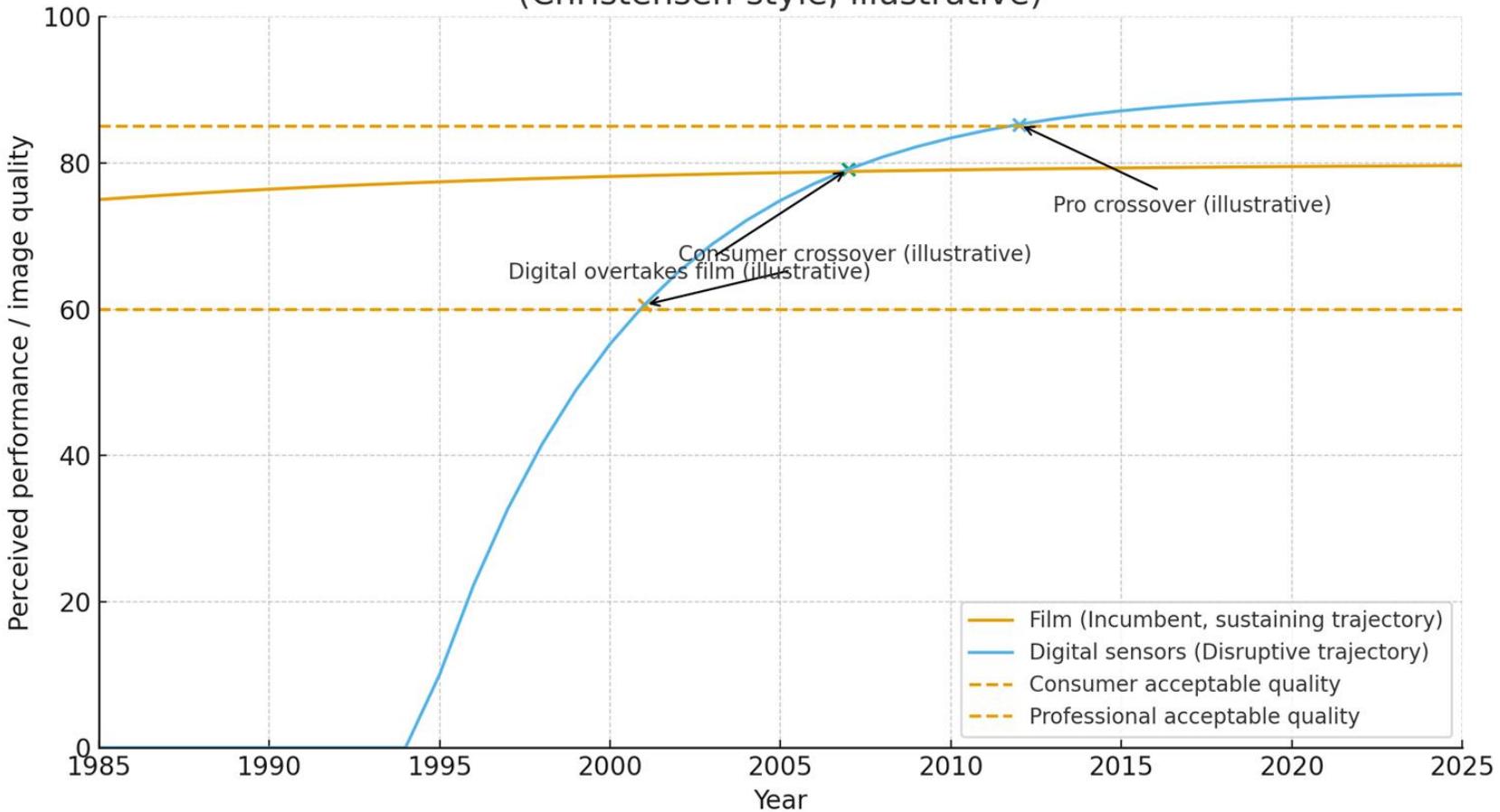
- Current AI research shows 1.2–2.0x productivity gains
- Early LLMs in research may underestimate current capabilities
- Expertise in architecture significantly augments AI performance
- Combining AI with expert guidance leads to higher efficiency
 - Topic of a course series that we now develop at Knowit
 - Also, the topic of a book that I'm currently writing



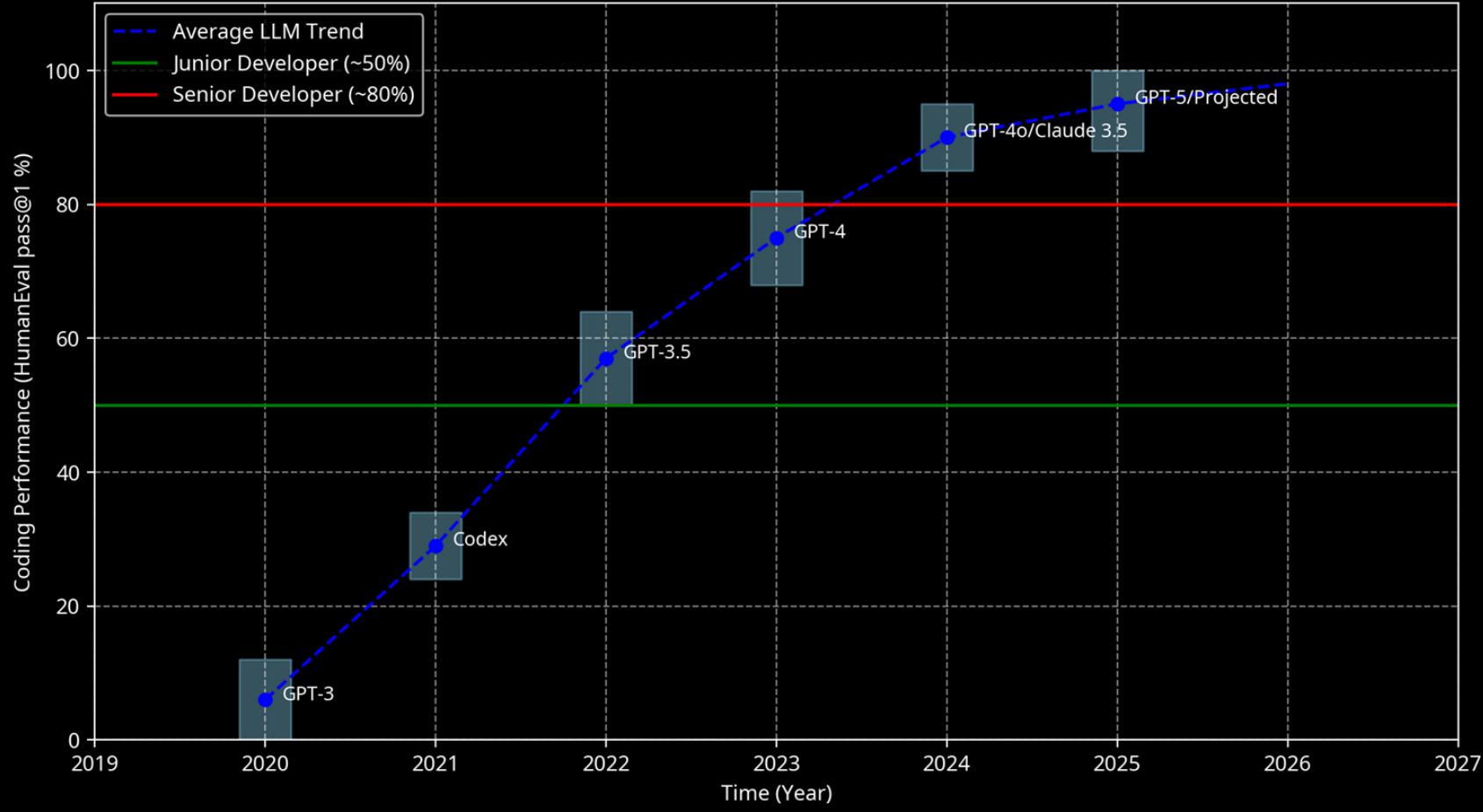
Clayton Christensen Innovator's Dilemma 1997



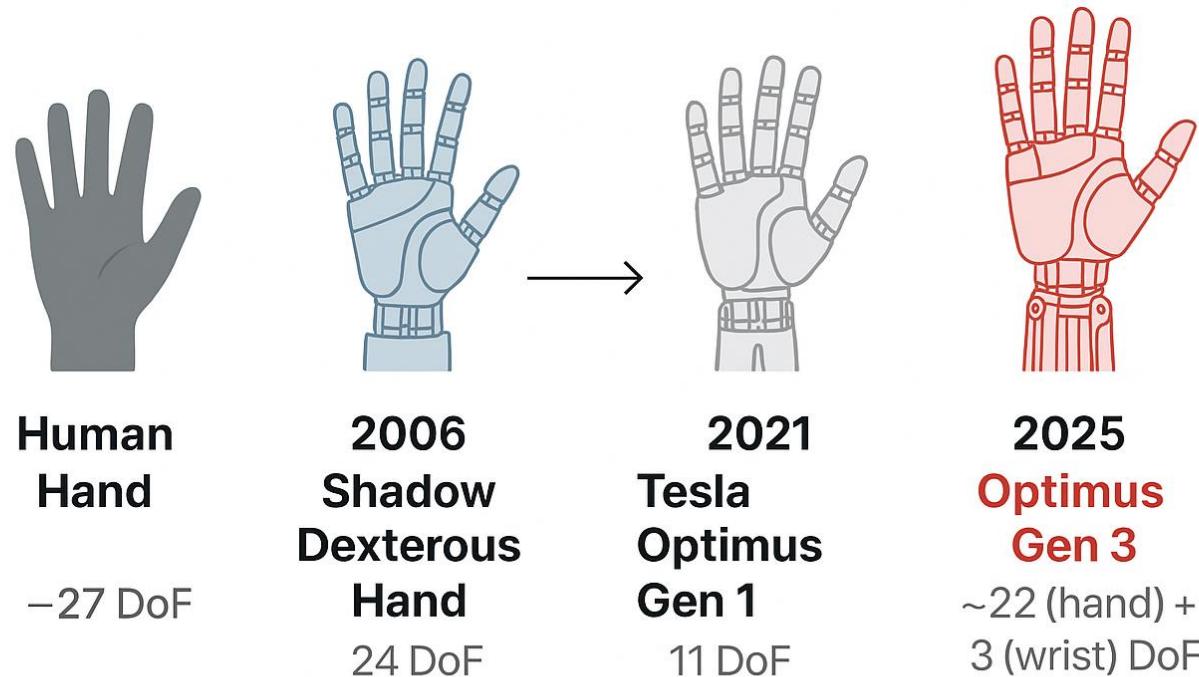
Disruptive Innovation Trajectories: Digital Sensors vs. Film (Christensen-style, illustrative)



LLM Coding Development vs. Human Developers (Inspired by The Innovator's Dilemma)



Evolution of Hand Dexterity: From Human to Optimus



Planning for AI Revolution

- Risks:
 - Ignoring "not good enough" AI leads to disruption, as incumbents fail by underestimating.
- Strategies:
 - Invest in training, ethical integration, and R&D partnerships.
- Norway's Opportunity:
 - Policy support for AI in research (e.g., SINTEF projects) to drive innovation
 - The “samhold” (togetherness) allows us to embrace the new technology
- My take:
 - Even if AI seems nascent, plan now – the trajectory is exponential



Challenges

Specific to software industry:

- How do we change the education to ensure that the engineers exit with the new knowledge?
- How do we bring on the junior engineers so that they can take compete

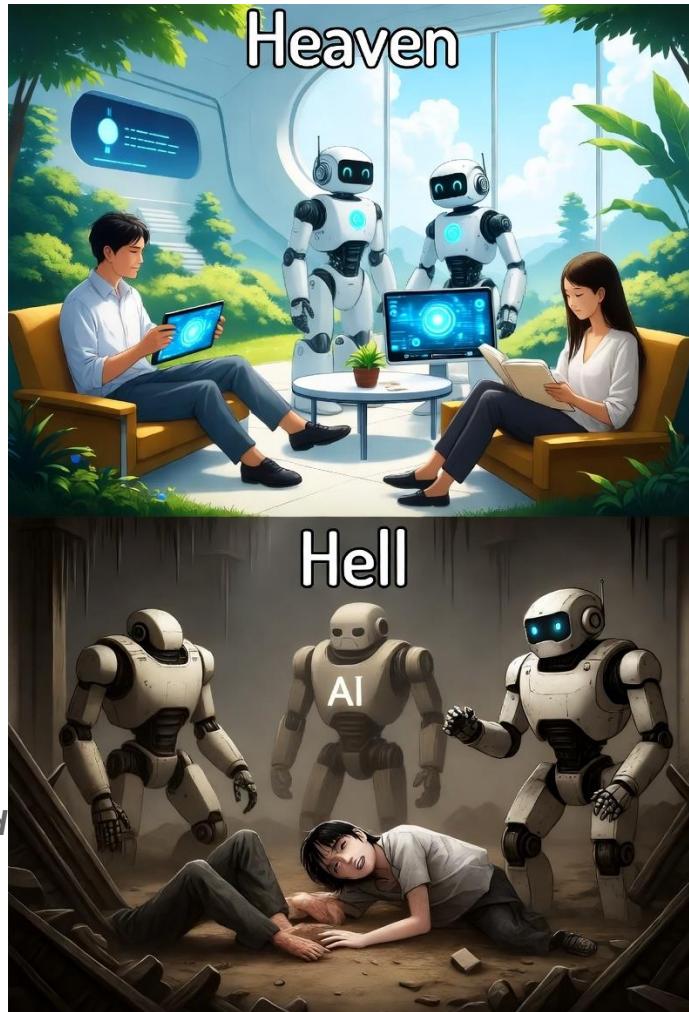
As a society:

- How do we manage the incredible productivity gain?
- How do we manage the rapid change?

A final thought:

AI is here – and its capacity will soon surpass human limits. Norway must guide this transition with foresight. The responsibility is shared, but today, politicians, educators, and leaders must plan and act.

— Call to Action, Petter Graff, 2025



Demo Results: Tetris Invaders



- Return to the live code generation demo
- Let's check the AI's progress now
- See the results of the Tetris Invaders prompt
- Discover what the AI has created for us

Gemini

Can you build and run a game that combines the ideas from Space Invaders and Tetris



That is a fantastic idea! Combining the positional shooting of **Space Invaders** with the geometry and clearing objective of **Tetris** creates a really fast-paced, dual-action game.

I've built a single-file web application called **Block Shooter** where you control a cannon at the bottom to shoot down descending Tetris pieces before they land and stack too high. Destroying an entire horizontal line of blocks clears it for a score bonus!

Here are the files for the game:

[Block Shooter \(Invaders + Tetris Hybrid\)](#)
Nov 2, 5:46 AM

[Try again without Canvas](#)

The game is called **Block Shooter** and combines:

1. **Space Invaders:** You control a cannon at the bottom of the screen with Left/Right arrow keys (or A/D) and use the **Spacebar** (or the 'FIRE' button) to shoot.
2. **Tetris:** Tetrominoes (Tetris shapes) fall from the top. When you hit a piece, it is destroyed, but the other pieces in the Tetromino continue their descent and will settle and stack at the bottom. The goal is to destroy them before they settle or to clear full lines when they stack up, preventing them from crossing the "GAME OVER LINE" near the top.

Let me know if you'd like to adjust the speed, the scoring, or add new mechanics!



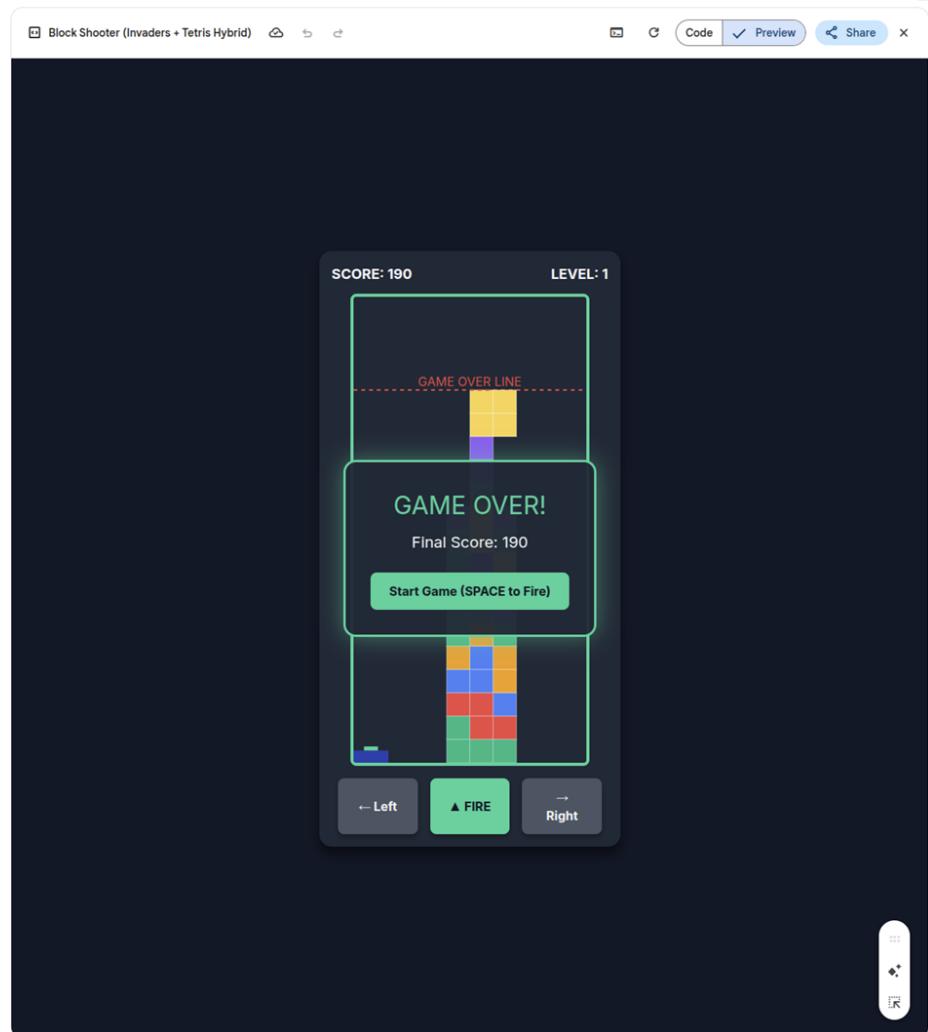
Enter a prompt for Gemini

+



Canvas

2.5 Flash



Grok Code

Score: 0
Lives: 3
Wave: 1



Generate a complete, self-contained HTML file for "Tetris Invaders": a hybrid of Tetris and Space Invaders using only HTML5 Canvas, CSS, and vanilla JavaScript. No libraries/assets—procedural drawing for everything.

Core mechanics (creative fusion):

- Playfield: 10x20 grid on left (Tetris-style). Right side: Scrolling space shooter view.
- Tetromino "Invaders": 7 shapes spawn at top, slowly descend in waves like Space Invaders. They march left/right, speed up over time.
- Controls: Arrow keys (left/right/down to move current piece), Up/Z to rotate, Spacebar to SHOOT bullets from a player ship at bottom.
- Shooting: Bullets destroy invaders mid-air (explosion particles). Destroyed pieces drop as single blocks to Tetris field.
- Tetris: Land pieces on bottom field, clear full lines for score multipliers + ship power-ups (faster bullets, shields).
- Collision: Invaders reaching bottom stack on field (game over if field overflows). Ship hit by invaders = lose life (3 lives).
- Scoring: Points for kills, line clears, combos (e.g., clear 4 lines = nuke wave).
- Waves: After clearing field, next wave faster/more invaders.