



Optimizing AI Developer Productivity: Insights from Habit Analysis

This dataset simulates the productivity of AI developers over 500 days, capturing the subtle interaction between deep work, distractions, caffeine intake, and code quality.

Methodology & Data Overview



Diving into the Data:

Dataset: [AI Developer Productivity Dataset on Kaggle](#)

hours_coding	Total focused hours spent on software development work (0–12 hours).
coffee_intake_mg	Daily caffeine intake in milligrams (0–600 mg).
distractions	Number of distractions (e.g., meetings, Slack notifications) (0–10).
sleep_hours	Number of hours of sleep the previous night (3–10 hours).
commits	Number of code commits pushed during the day (0–20).
bugs_reported	Number of bugs reported in code written that day (0–10).
ai_usage_hours	Number of hours spent using AI tools (e.g., ChatGPT, Copilot) (0–12).
cognitive_load	Self-reported mental strain on a scale of 1 to 10.
task_success	Target column — whether the daily productivity goal was achieved (0/1).

Sleep hours effect



Higher tasks success rate

6-8 hours sleep: 20% more tasks succeed.

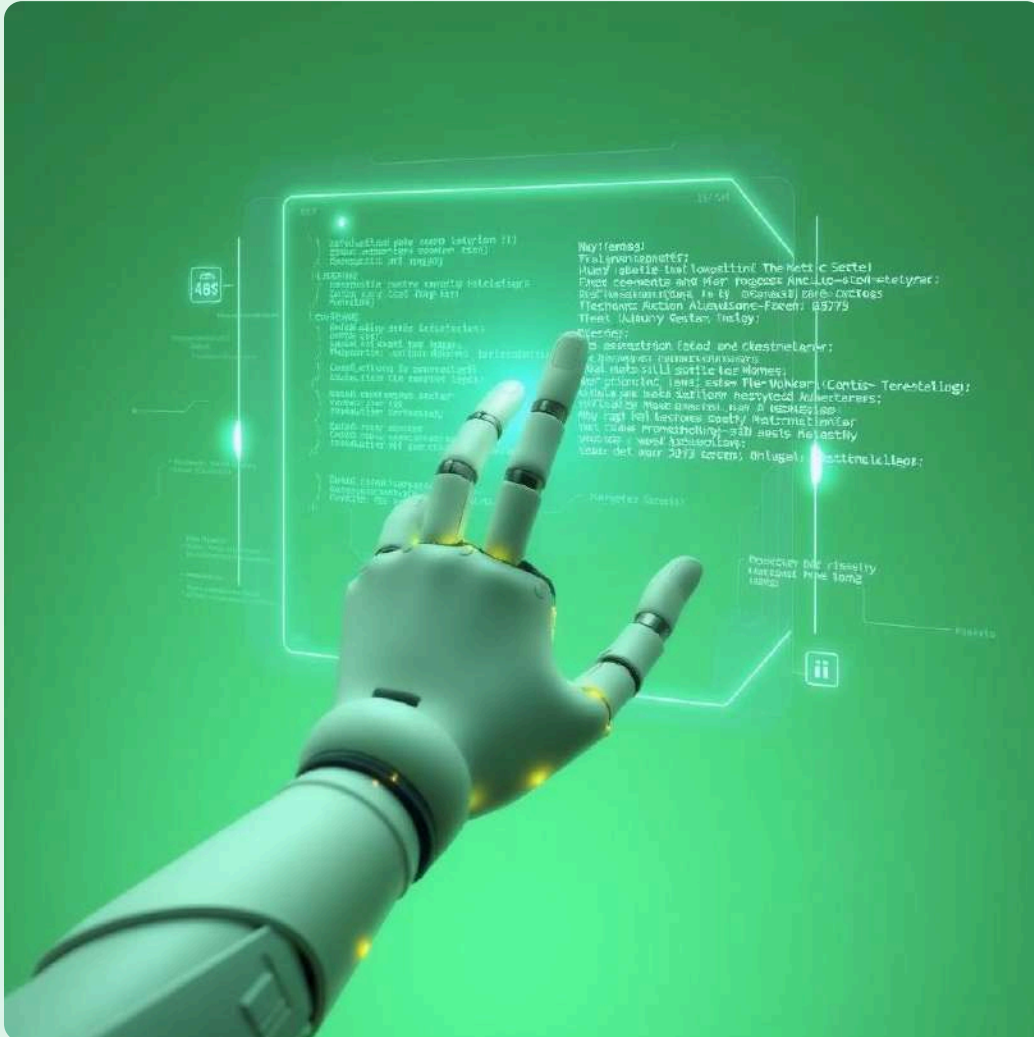


Fewer Bugs

<6 hours sleep: 87% more critical bugs.



AI Tool Usage effect



Optimal Usage

1-3 hours/day: 28% more commits.

More guaranteed success

3-5 hours/day: 66% Task success rate.

Excessive Use

>5 hours/day: 23% higher cognitive load.

Coffee intake effect



Coffee Benefits

300-500mg: 48% Task success rate, 6% lower cognitive load.



Over-Caffeination

>600mg coffee: 9% increased cognitive load compared to moderate intake





The Impact of Distractions

Distractions significantly influence developer productivity and cognitive load. Our analysis reveals clear correlations between interruptions and various performance metrics.



Increased Cognitive Load

3+ interruptions/hour: Led to a **40% higher cognitive load**, indicating significant mental strain.



Reduced Code Output

<2 major distractions: Correlated with **7% more code**, highlighting the value of uninterrupted focus.



Synthesizing Key Insights

Optimal Developer Profile:



Sleep

6-8 hours



AI Usage

3-5 hours



Coffee Intake

300-500 mg



Distractions

<2 major interruptions

This profile correlated with a 28% increase in commits, 6% lower cognitive load and 66% increase in task success rate



Meet the Habit Whisperer: Our Daily Success Predictor

After analyzing hundreds of coding days, we built something more than a model — we built a **daily decision-making companion**.

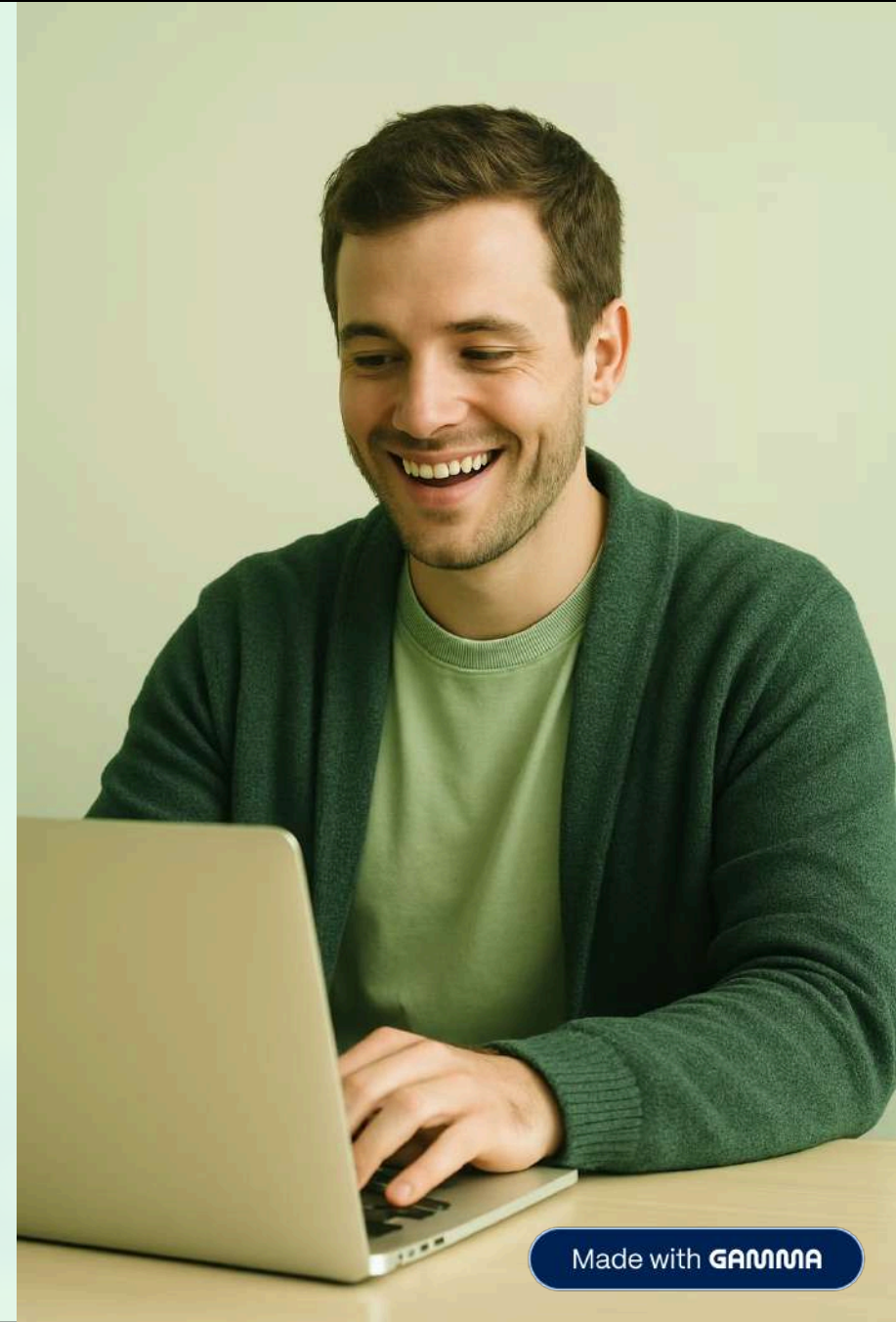
“Based on my sleep, focus, caffeine, and AI usage... will today be productive?”

Now, with just a few taps, our app gives you the answer.

Meet the Habit Whisperer: Our Daily Success Predictor

How It Works:

- You answer questions about your day — coffee, coding hours, distractions, sleep, AI use, etc.
- Behind the scenes, our model processes your habits with smart feature engineering like:
 - How much coffee per hour of coding
 - Squared AI usage (yes, too much AI does add pressure!)
 - A smooth log transformation to avoid caffeine shock



Meet the Habit Whisperer: Our Daily Success Predictor

The result?

A prediction of **task success**, backed by:

- A **92% F1-score**
- Real-world habit insights
- Clean, accessible design (built with Streamlit)

It's like a daily mirror for developers — showing you whether your habits are aligned with your goals.

 [Try the Habit Whisperer Yourself](#)

 [Launch the App](#)

Actionable Recommendations for AI Devs



1 Prioritize Sleep

Consistent schedules; aim for 7.5+ hours.

2 Strategic AI Use

Integrate for routine tasks; avoid over-reliance.

3 Minimize Distractions

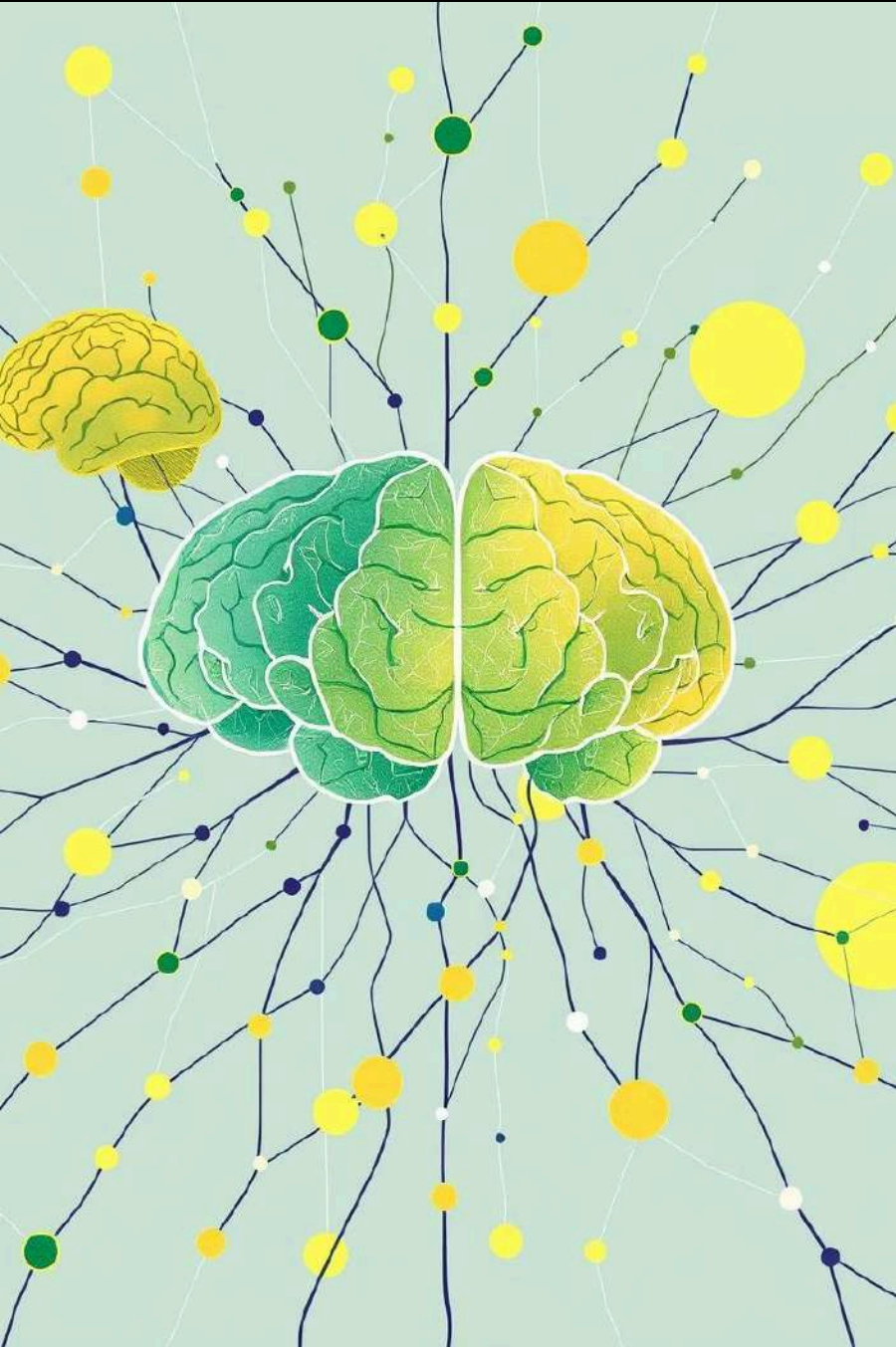
Establish "focus time"; use noise-canceling tools.

4 Mindful Coffee Consumption

Moderate intake; avoid high doses post-midday.

5 Continuous Monitoring

Track habits and productivity via personal dashboards.



Conclusion & Next Steps

Small habit adjustments yield significant productivity and code quality gains. Empowering developers with data-driven insights improves well-being and output.

1

Future Research

Explore personalized habit recommendations via machine learning.

2

Long-Term Goal

Foster a culture of sustainable, high-performance AI development.