Episode Book

EPISODE #6514

Why Even Solo Developers Face a GPU Shortage

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SYNOPSIS

On-demand GPU rental capacity has quietly dried up, catching solo developers fine-tuning on a single L4 just as severely as hyperscalers. An analysis of surging memory costs, multi-year contracts, and discontinued older architectures reveals why providers are deprioritising on-demand users. In response, builders turn to public compute initiatives like NAIRR and EuroHPC, where free academic allocations are rapidly becoming the only way small teams can secure compute time.

TRANSCRIPT



Corn

I waited forty minutes for a coffee machine this morning. The machine was fine. The queue was the machine.



Herman

You're going to love today's prompt then, because it's a queue the size of the entire AI industry. Daniel wrote in — he's been a heavy Modal user for a couple of years, and just this past week he's been running fine-tuning jobs on a single GPU and hitting a wall. L4 capacity thin on the ground, and when he tries Nebius or RunPod, the answer keeps coming back, quote, "we just don't have any available."



Corn

That quote is the whole episode. Not "premium tier," not "waitlisted" — just none.



Herman

And his framing is the interesting part. He says one person fine-tuning on one GPU is technically the bottom of the totem pole for GPU usage — and even there, at the very bottom, access has become a real thing. He wants to go from the news story, "there's GPU pressure," to what it concretely means for the people building: how real is the pressure, and what does it look like for a solo developer, a startup, or a scaled-up outfit trying to train a new model. He also flags that grants for GPU time from universities and public programmes are turning into something valuable, which I want to get to, because that's a bigger shift than it sounds.



Corn

So let's start with how real this actually is — because the numbers are strange.



Herman

Real enough that I'd call it structural, not a blip. The SemiAnalysis piece from April is the one everyone quotes. One-year H100 rental contracts rose almost forty percent in about five months — from a dollar seventy per GPU-hour in October of last year to two thirty-five by March. And their flat statement was, "on-demand GPU rental capacity is sold out across all GPU types."



Corn

"Across all GPU types" is the part I'd have bet against. You'd assume the shiny new cards are scarce and the old ones pile up behind them.



Herman

That's the natural assumption, and it's backwards right now. By March, H100, H200 and B200 capacity "for any term" was nearly impossible to find. About half the providers they asked were sold out of eight-node Hopper clusters. Blackwell capacity coming online through August and September of this year was already booked before it existed, and some H100 contract renewals are being extended to twenty twenty-eight.



Corn

Renewing in 2026 a contract on a 2022 chip through 2028. That's not a shortage, that's a siege.



Herman

The demand side is the part nobody predicted cleanly. It's not training runs at the frontier — it's agentic coding workloads, inference on the open-weight models like GLM and Kimi, image and video generation, plus the big lab fundraises buying capacity ahead of need. And the supply side got hit at the same time: memory contract prices — DDR5 and LPDDR5 — were projected at four to five times year on year early this year. Server makers repriced, some deployments got delayed. You have demand surging and the input costs to the supply surging simultaneously.



Corn

So the memory crunch we covered with the RAM price crisis shows up here too, wearing a different hat.



Herman

Same underlying physics, different bill. Now, on duration — this is contested. Some coverage in June argued it eases as Blackwell supply grows. Jensen Huang said three weeks ago that capacity is the bottleneck — working capital, debt, regional power — and that component capacity expands in stages through 2028. So even the optimistic read has 2027 not loosening much.



Corn

"Expands in stages" is a nice way of saying the line moves but doesn't end.



Herman

Right. So the pressure is real. But why does it hit a solo developer on a single L4 so hard? That's the totem pole, and it's worth walking up it.



Corn

Before you climb it — the L4. Daniel's card. Why is the cheap one scarce? That's the part that seems off.



Herman

It's a vendor's own numbers, so hold it loosely, but RunPod's CTO, Brennen Smith, wrote a piece in April — updated in September — saying Hopper and Ada Lovelace production has wound down in favour of Blackwell. The L4 is an Ada card. So no new units of the older part are being made, everyone still wants them because they're the affordable tier, and there's no replenishment coming. His phrase was "the era of cheap, abundant on-demand GPU compute is paused, at minimum."



Corn

A GPU rental company telling us GPUs are scarce. I'll take that with a pinch of salt.



Herman

Noted, and he'd probably say so himself. But the mechanism is sound — it's what happens when a generation ends. Now walk up the pole. At the top: labs and hyperscalers signing multi-year deals and committing factory output years ahead. Microsoft signed a five-year capacity deal with the neocloud IREN back in May. The neoclouds themselves fund these build-outs with debt — CoreWeave's bonds were reportedly yielding around fifteen percent in mid-October.



Corn

Fifteen percent. Banks are telling them the plan only works if everything works.



Herman

Which is why they behave the way they do. Nebius said in its Q3 2025 results, "everything we deploy, we sell," and they talked openly about learning to say no to customers. CoreWeave's CFO reportedly described the company as largely sold out of this year's capacity. So the middle tier — startups — walks into providers who now want upfront payment, committed spend, and who deprioritise short contracts. RunPod's own blog says as much.



Corn

Which is almost considerate of them. "We're not ghosting you, we're deprioritising you."



Herman

And RunPod is not exactly a victim — they raised a hundred million at a billion-dollar valuation in June, revenue reportedly roughly doubling to about two hundred and forty million annualised in five months. They rent AMD GPUs as the easier-to-get alternative, which tells you the Nvidia queue is the real product.



Corn

Then the bottom of the pole: on-demand and spot. The leftovers. Which is where Daniel lives.



Herman

Which is exactly where "sold out" shows up first, because on-demand is the pool everyone drains. If you hold an on-demand instance right now, you don't release it back — even after price hikes. SemiAnalysis noted that specifically. So the pool only shrinks.



Corn

And it's not personal. He's price-sensitive, short-term, low-commitment — three things that make him the least profitable customer in the building.



Herman

Right, it's economics, not malice. A provider with finite H100s will always pick the customer who commits to a year. The single-GPU fine-tuner is rounding error — until there are a hundred thousand of them, which is what happened.



Corn

What can he actually do, short of the grants? Practically.



Herman

The moves RunPod themselves recommend, which is telling — the vendor is teaching you to need them less. Make jobs run on several GPU types. Plan scarce capacity ahead rather than expecting it on demand. Quantise and batch. Use scale-to-zero serverless so you're not paying to hold your place in line. And don't use spot for anything that has to finish — spot is the first thing reclaimed when capacity tightens.



Corn

Daniel's already doing the fallback thing — Modal lets a function list several acceptable GPU types, and he's had to widen that list. Which is the quiet tax: your job takes longer, or runs on a card you didn't benchmark, and the invoice looks the same.



Herman

Or bigger. And the consumer-card escape hatch — buy an RTX card and do it at home — isn't clean either. Reports early this year, and the figures are disputed, said Nvidia cut RTX 50-series output citing memory shortages. Same root cause, following you home.



Corn

So there's no exit, only slower doors. Let's get to the grants, because that's the part I keep circling. Daniel says they're "turning into something valuable" — and I want to test that, because a grant is usually the consolation prize of the computing world.



Herman

It stopped being a consolation prize the moment commercial on-demand dried up. Free GPU hours from a public programme is now the only capacity some builders can get at all. And the programmes are real. In the US, the National Science Foundation awarded thirty-five million dollars over five years, announced in September, to the San Diego Supercomputer Center, to run a NAIRR Operations Center — that's the National AI Research Resource, and this turned it from a pilot into lasting infrastructure.



Corn

That's the pivot from pilot to institution. Somebody decided this wasn't an experiment anymore.



Herman

The pilot, launched January 2024, connected about nine hundred research teams and educators across all fifty states in its first two and a half years. In the UK, Isambard-AI in Bristol — about a thousand research projects and over four thousand users in its first year, and Bristol says every single call for access was oversubscribed. Small firms can apply for rapid-access allocations of up to about twenty thousand GPU hours.



Corn

Twenty thousand hours. For a solo fine-tuner like Daniel, that's not seed money, that's a year of experiments.



Herman

On a single L4 it's more than two years of continuous running — and nobody gets continuous running, so in practice it's a serious body of work. The EU goes further: the EuroHPC AI Factories give free GPU hours to European startups and SMEs in tiers. There's a Playground, a Fast Lane up to fifty thousand GPU hours over three months, and Large Scale beyond that.



Corn

With the inevitable footnote, surely.



Herman

Some of their machines are listed as unavailable "due to high demand," and some access modes as temporarily closed, on their own pages when we looked. Which is almost poetic — the free public capacity is oversubscribed for the same reason the paid capacity is sold out.



Corn

The shortage chasing the shortage.



Herman

There's one more lane worth mentioning, because it's how a lot of startups actually start now: Nvidia's Inception programme routes credits through partners — Nebius reportedly up to a hundred and fifty thousand dollars, others smaller. Treat the amounts as approximate; these are vendor numbers. And some cloud credit programmes have started excluding GPU products entirely — DigitalOcean did that in May.



Corn

A cloud credit that excludes GPUs is a coupon for the part of the store that's already full.



Herman

Before we go further, though. Do you read Daniel's experience as the leading edge, or is he just unusually dependent on one small card?



Corn

Leading edge. He did the textbook things — years on one platform, modest requirements, fallback lists — and it still caught him. If the disciplined bottom-of-the-pole customer is hitting walls, the pressure isn't hypothetical anymore; it's just slow to show up in the indices. The indices measure contracts. He measures jobs that don't start.



Herman

That matches something I noticed in the SemiAnalysis detail — people holding on-demand instances and not releasing them even after price hikes. Nobody releases capacity they expect to need next week. Hoarding is the rational move, which is how you know it's structural.



Corn

Here's my doubt about the grant story, though. If grants become valuable because the market is squeezed, doesn't the same squeeze flood the applications? Bristol already says every call is oversubscribed.



Herman

It does, and that's the ripple effect worth naming. The more builders get pushed toward public programmes, the more those programmes ration. You could end up with grants that are easier to qualify for and harder to win. Meanwhile the same pressure pushes everyone who can't win a grant toward efficiency — quantisation, batching, smaller models — and toward AMD hardware, which is suddenly not the second choice but the available first one.



Corn

Let's take a listener message on exactly this. Tilda left us a voicemail.
Tilda: Hey Corn, hey Herman, this is Tilda, I'm calling from the cab of my truck parked outside the feed store in Statesboro, Georgia, waiting on my husband to come out with a load of layer pellets, and I just wanted to say y'all's episode on that GPU shortage, or GPU pressure like Daniel called it, came on right as I was sitting here and I got to thinking about my nephew who does that computer training at the community college over in Swainsboro, and he told me back in the spring he had to wait near about six weeks for a slot to open up, and I guess what I want to ask is, is a public GPU grant the kind of thing a regular family could help somebody apply for, or do you have to already be at one of the big schools to even be considered?



Corn

Tilda, first — six weeks for a community college slot is a real datapoint. That's the bottom of the pole reporting in from Georgia.



Herman

And the answer to her actual question is better than she might expect. NAIRR's pilot reached about nine hundred research teams and educators across all fifty states, and the whole point of a national research resource is access beyond the handful of universities that own their own supercomputers. The usual route is through an institution, so her nephew would most likely go through his college, with a teacher or researcher there backing the application. The family's job is mostly to not let him assume it isn't for him.



Corn

The honest caveat is that oversubscribed means the application has to be sharp. Check the current call before getting hopes up. Thanks, Tilda.



Herman

So where does that leave the three tiers? Let me lay them side by side.



Corn

Do — because I think the contrast is the answer to Daniel's whole question.



Herman

The scaled outfit training a new model isn't shopping, it's negotiating. Multi-year commitments, factory allocations, finance people arguing about debt. The startup is being asked to behave like a small institution — committed spend, upfront payment, and increasingly, grant applications alongside the venture money. The solo developer is left doing what Daniel's doing: engineering around scarcity. Fallback lists, quantisation, serverless, patience.



Corn

Two of the three tiers just discovered they're in the same queue as everyone else.



Herman

Yes, and the queue's the story now, not the chips. I'll tell you the detail that keeps nagging me — Corn, do you remember when the pricing went from a market to an auction?



Corn

When people stopped releasing instances. The moment holding beats renting, the price stops meaning anything.



Herman

That's it. Two dollars and thirty-five cents an hour is the price of an H100 nobody will sell you.



Corn

Which is my favourite kind of price.



Herman

And it's the whole stack, down to the L4 and the consumer shelf. The shortage didn't trickle down. It was already at the bottom. Scale-to-zero serverless still works — that's the one efficient corner left — but "rent a big card when inspiration strikes" is paused, at minimum.



Corn

Paused at minimum. The vendor's disclaimer is becoming the industry's weather report.



Herman

For the scaled tier, though, the interesting question isn't whether they get GPUs. It's what fifteen-percent-yield debt does to their patience. When your financing costs that much, a multi-year capacity lock isn't caution, it's survival. That's why renewals stretch to twenty twenty-eight. Nobody's confident about the price of patience later.



Corn

So the top tier hoards, the middle tier commits, the bottom tier adapts. And the grants sit outside all three, getting more crowded by the week.



Hilbert

Eleven.



Corn

Eleven what?



Hilbert

Gig. On the ten eighty Ti. You two were on about buying a consumer card earlier, and I thought, I've got one of those. Eleven gig of memory. I've got it on the shelf above the mixing desk, holds the door open when the window rattles, and it says eleven on the cooler shroud if you tip it forward. Corn keeps leaning past it to look at the guest mic, so he's had all week.



Corn

He's right, I've been staring at a graphics card for a week and never once saw it.



Hilbert

My nephew Denny wanted two of them for a rig, back when everybody wanted a rig. This was the year you couldn't get a card for love nor money. Store in Rahway had a two-per-customer rule and a line around the corner by seven a.m. Denny got there at five forty. I know because I drove him, and he's never let anybody forget he waited two hours and twenty minutes in a coat that did not suit the weather. We got the two cards and then the prices went silly and he sold one to a man at his church and kept the other one on his dresser for a while like a trophy, and then it turned out the church man paid him in instalments and stopped after the second one.



Herman

How much was the instalment?



Hilbert

Eighty dollars a month. He got a hundred and sixty of four hundred, and I told him, you didn't sell a card, you lent a stranger money. The one on my shelf is the other one. Denny gave it to me when he moved flats. It runs the little language model I keep on the spare machine under the desk, next to the kettle. Takes about a minute to answer anything, which suits me. It's plugged into the wall socket with the loose faceplate, so I don't move it much.



Corn

A model that answers in a minute. You've accidentally built the most Corn-compatible computer in Jerusalem.



Hilbert

It's not an accident, I just don't like hurrying a machine. And the shroud's cracked at one corner, so it runs warm. Room's warm anyway.



Herman

The crack's from the shelf bracket, isn't it. Card's sagging on one end.



Hilbert

It droops, yes. I folded a matchbook under the far corner in Rahway and it's still the same matchbook. Denny says I should get a bracket, and he's probably right, though the man's lending standards leave something to be desired.



Corn

Let's pull this in. The one thing — if you take one thing from today, it's this: the shortage stopped being a headline the moment it reached the person with one small card and a modest job. When the disciplined solo builder can't get an L4, scarcity isn't a market story



Corn (continued)

anymore, it's a floor under everything.



Herman

And the sharpening on that: the floor is moving. Contracts stretched to twenty twenty-eight aren't a forecast of scarcity — they're a price on the uncertainty itself. Nobody will sell you patience at a fixed price anymore.



Corn

The question I'd leave open is whether the public programmes scale faster than the queue at their door. Bristol was oversubscribed in year one, and that was before this winter's squeeze fully landed on the solos.



Herman

If they don't scale, the interesting outcome isn't failure — it's stratification. Grants for institutions, commitments for the funded, and pure ingenuity for everyone at the bottom. Daniel's fallback lists and Tilda's nephew's six-week wait are the same fact wearing different boots.



Corn

Our producer, as ever, is Hilbert Flumingtop — who will be folding something under a graphics card by evening. For more along these lines, there's episode seventeen, Cloud Render Superpowers; episode eighteen, Beyond the GPU; and episode two, Local STT For AMD GPU Owners. This has been My Weird Prompts.



Herman

If you've hit the GPU wall yourself, tell us about it — and leave us a review on your podcast platform of choice. It helps people find the show.



Corn

We'll be back soon. See you then.