

## Entrepreneurial teen mines bitcoins, pays father for the power

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One sign that Evan Neal isn't your typical 16-year-old: He contributes several hundred dollars toward the monthly electric bill at his father's house to cover the cost of running his energy-hungry computer equipment.

It's all part of the latest business venture launched by the tech-savvy, rising high school junior, who uses high-powered computer processing to obtain newly created bitcoins, a process known by cognoscenti of the [digital currency](#) world as bitcoin mining.

"It's definitely entertaining," Evan said. "I see it as an experience."

A profitable experience, that is. By Evan's calculations, he estimates he has reaped more than \$2,000 in profit after deducting hefty expenses. Those costs include buying specialized hardware and contributing \$200 to \$300 to the electric bill at his dad's house.

He's also paying dividends to his co-investors, including four high school friends who at one point invested \$125 or more.

Campbell Harvey, a finance professor at Duke University's Fuqua School of Business, said the Triangle isn't a good spot for bitcoin mining given the relatively high cost of electricity here and the huge amount of power required to run the required computer hardware.

"That's the reason people are doing mining in areas where electricity is

very cheap," he said.

One exception, Harvey said, would be students who attend North Carolina colleges and live in dormitories where they don't have to pay for their own electricity.

"And that's not fair," Harvey said. "That shouldn't be allowed." Harvey has taught cryptofinance as part of an international finance course and has proposed teaching a new course next school year that would be "100 percent devoted to crytofinance," including bitcoins.

Bitcoin mining isn't Evan's first entrepreneurial venture.

When he was 11, Evan  an articulate youngster who, unlike many of his peers, rarely peppers his conversation with linguistic crutches such as "like" and "kind of"  started a business called Dream Programming. He would remotely log on to people's sluggish computers and optimize the machine's performance for \$25.

"I had a website, and I advertised it a little bit," he said.

But he only attracted a handful of customers, which he blames not on his youth  potential customers had no way of knowing he was 11  but on his lack of advertising expertise.

Since then, Evan has started a series of ventures, including a power-washing and deck-refinishing service and buying electronic devices in bulk and selling them on Amazon.com. He also repairs computers for a consulting business.

"There was a weekend recently," Evan's father, Dave Neal, said, "where he was doing bitcoin mining, he did a power washing job and he did a computer consulting repair job."

Dave Neal is a serial entrepreneur who has been involved in seven startups as chief financial officer or chief executive. Today, he's managing partner at The Startup Factory, a business accelerator in Durham .

He's impressed by how much his son has immersed himself in the arcane ins and outs of bitcoin, including the financial and legal aspects, as well as the technical angle.

"It's really interesting to watch somebody in your own household participate in such a cutting-edge thing," Dave Neal said. "He's 16, but it feels to me he is pretty much an expert in the field."

Bitcoins aren't backed by any government or controlled by a central agency. Critics say bitcoin is little more than a Ponzi scheme. The digital currency has become controversial because the anonymity it provides makes it attractive for money laundering and drug deals.

But the digital currency gained traction after federal officials said at a Senate hearing that there are legitimate uses for bitcoins, and by attracting investors such as Tim Draper, a Silicon Valley venture capitalist who recently purchased nearly 30,000 bitcoins in a U.S. government auction. Bitcoins are also accepted as payment by businesses such as Overstock.com and online game company Zynga.

The value of a bitcoin has fluctuated considerably, soaring above \$1,000 last year. As of Tuesday afternoon, a bitcoin was worth \$625, according to Preev, a website that tracks the value of the currency.

Evan typically keeps his bitcoins for just three or four weeks before exchanging them for cash, which insulates him from much of the market's fluctuations.

Evan dipped his toe into bitcoin mining about a year ago after hearing about it from some friends and doing some investigating. But he soon discovered that if he wanted to make money at it, he would need more computer horsepower.

To understand why, you need to know how bitcoin works.

Bitcoin traces its beginnings to an algorithm created in 2008. No one has come forward as its creator, but he or she or they operate under the pseudonym Satoshi Nakamoto.

Because bitcoins are all-digital, security is a prime concern. Digital currencies are worthless if they can be copied. That's where mining comes in.

Miners use specialized [computer hardware](#) to verify groups of transactions and, more importantly, add a new layer of security to what is known as the block chain, a ledger of every bitcoin transaction.

Duke University's Harvey likens it to a series of vaults that are linked together. Miners, he said, "are sealing off this vault with a computer program."

"The reason you have to do this is so that nobody can hack it," Harvey added. "You would need 25,000 of the world's fastest supercomputers to get into this block chain. It's just not feasible."

Miners who manage to solve a difficult mathematical puzzle and create the vault first  before hordes of others who are equally intent on winning this cyber race  are rewarded with newly created bitcoins. Currently, 25 bitcoins are handed out as rewards about every 10 minutes.

In effect, miners are "competitive bookkeepers," Harvey said.

Many miners, including Evan, join online pools of miners who combine their digital resources and share in the rewards. Those rewards end up being a fraction of a bitcoin per individual miner; Evan estimates he has mined about 4.5 bitcoins so far.

The competition among bitcoin miners has pushed some to invest in more computing capacity, which is why Evan is about to embark on his third round of costly hardware purchases.

He has done well reselling the hardware once he moves on to something more powerful.

For instance, early this year, in his second round of hardware purchases, he spent about \$1,250 for three AntMiner S1s  which are high-powered ASIC chips designed for mining digital currencies. He sold them recently for about \$300 each.

He reinvests most of his profit in new hardware. Last week, he was looking at purchasing four just-released AntMiner S3s for about \$500 each.

Evan concedes that the ever-escalating cost of hardware may end up pricing him out of the bitcoin mining business.

On the other hand, he said, "I could also expand in a way that I'm the person pricing other people out."

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