## **BITS&CHIPS**

## O P I N I O N

## Dear headhunter



Bram Nauta is a professor of IC design at the University of Twente.

## 11 May 2022

After an impeccable educational career with the highest of marks in obfuscation and embellishment, a poor graduate asks headhunter Bram Nauta why no company wants to hire him.

I went to an excellent university, with professors who were famous because they published papers at all kinds of conferences. That was very inspiring for me. I studied electronic circuits and soon I was allowed to help with the measurements of the older students. I didn't understand what I was doing, but the machines looked impressive. I had to collect a lot of data, which was easy because my professor said I could remove all the bad numbers. Those were probably measurement errors, he said, and he must be right because he's famous.

Later, I had to check the literature and find the best numbers published so far. Next, I had to remove some more numbers, which were worse than those already published. My professor said I could delete them all, and backups weren't needed. The paper was accepted – that was a very good experience!

My professor asked me to use the fanciest buzzwords

Because I was so successful, I decided to go for a PhD degree. I took an existing chip from another student and made a small modification. I asked a junior student to do the measurement, exactly like I was taught to do. Then I had to write the paper. I was asked by my professor to use the fanciest buzzwords, especially in the title. According to my professor, this looked smart and would impress the reviewers for the conference. They don't have time to fully understand the work anyway; they only care about how cool the paper looks at their conference.

The chip was a low-power clock generator. So, I came up with this title: "A nanoscale ultrabinary digitally controllable oscillator, with automatic frequency control exploiting phase detection, loop filtering and signal enhancement including buffering for artificial intelligence and internet-of-things applications." That sounds like I really had invented something new!

Much better than: "A 2 mW phase-locked loop," which would of course never get accepted – 2 mW is way too much! I was allowed to use six figures, but I filled each individual figure with six sub-figures a) to f). That's still six figures, right? Sure, they're hard to read. If you insist, you can zoom in on the PDF and see something – more or less.

The junior student came back with the measured numbers. I asked if he really measured these, and he said yes. Obviously, I didn't have to check the results. It's so nice I can trust people here! The numbers were much better than the simulations, so the simulations were probably wrong. When I was making the table of comparison, I saw that there were two other papers with better performance. So, I asked my junior to tune the supply and all 26 bias tweaking points to the millivolt level and turn off the averaging function on the test equipment. Now, some of the measurements were much better, while some were much worse. In fact, they were jumping all over the place! So, we quickly made a screenshot of the best jump we could see. Now, our results were much better than state-of-the-art.

When I finished my manuscript, my professor said it was too clear, and the reviewers might understand it and not like the limited innovation. Also, they might conclude that the measurement results wouldn't be possible. So, he asked me to rewrite it in a more bombastic way. Instead of "differential pair," I now used "symmetric interference canceling structure exploiting the matching of on-chip transistors while canceling temperature effects." Instead of individual transistors, I showed block-level diagrams, which looked much more impressive. As expected, my paper was accepted, and I was so excited to present my fantastic results.

So you see, dear headhunter, my educational career is impeccable. Yet, when I applied to several companies, they didn't seem to appreciate this at all. Why won't anybody hire me?