Where Silicon Meets Intelligence: My VLSI Journey Through the ST Innovation Challenge

As a third-year VLSI student immersed in semiconductor design, circuit optimization, and hardware layouts, I never expected a competition to transform my understanding of what's possible. Yet our team's first-place finish at the STMicroelectronics Innovation Challenge with Angad and Harsh did exactly that – revealing the exciting frontier where silicon meets intelligence.

Our project, "License Metric" – an AI-powered Driver Evaluation System using ST's SensorTile.Box Pro, transforms how driving skills are assessed. By processing accelerometer and gyroscope data directly on the device with

TinyML algorithms, we created an objective, corruption-proof alternative to traditional evaluations.

What made this possible was ST AIoT Craft – a platform that bridged my hardware background with AI implementation. Without writing complex ML code, we collected real-world driving data wirelessly, visualized sensor outputs in real-time, and deployed optimized models directly to our edge device. For someone focused on hardware, seeing machine learning deployed so seamlessly was transformative.

The highlight was presenting at ST's Greater Noida facility, where industry experts provided invaluable feedback on our system. When a judge suggested we write a research paper on our TinyML approach, I realized our work had significance beyond the competition. Touring the Da Vinci Lab and seeing cutting-edge semiconductor innovations reinforced my belief that VLSI's future is intertwined with embedded intelligence. This experience showed me how hardware design must now consider AI integration from the beginning.

None of this would have been possible without CiPD for their unwavering support, nurturing environment, and providing all the resources we needed to bring our vision to life. I'm equally grateful to Dr. Anuj Grover for his continuous mentorship, and the incredible ST team – Raunaque Sir, Hemdutt Sir, and Mridupawan Sir – for their technical guidance throughout our journey.

As I continue my VLSI studies, I'm now focused on the exciting intersection of hardware and artificial intelligence – where chips don't just compute, they understand.

By Abhishek Jha