



CREATING WORLD-CLASS FRONTIER TECH LOCALLY WHILE SERVICING A **GLOBAL MARKET**

Interview with Vijay Pradeep, Roboticist, Tech Investor, & Founder of Virtana

Could you describe your work in the Caribbean Tech Industry?

Virtana is a robotics software development studio working alongside tech companies to develop the next generation of robotics systems & solutions. Our projects & collaborations span a variety of industries including construction, manufacturing, logistics, aerospace, & healthcare. Whether we're designing algorithms for an autonomous excavator, integrating new sensors into a delivery drone, or developing machine learning algorithms for a low cost IoT (Internet of Things) device, our 20 staff are able to understand our clients' needs and deliver world class, custom technology solutions.

Virtana is a technology company, but even more so, we're a frontier tech company (a.k.a. deep tech or hard tech). We are creating new algorithms & systems that have never been built before, which

is fundamentally different from tech-enabled businesses (i.e., businesses that use & integrate existing technologies to solve a specific business or customer need). By creating a frontier tech business locally, we're showing that the Caribbean has the people, expertise, and drive needed to actually solve extremely challenging problems that many assume can only be done by tech heavyweights like Google, Apple, or Amazon.

What are your recommendations for the Caribbean Tech Industry to advance Social Inclusion?

We need to ensure the region's world-class talent is working on the region's and the world's most transformational problems. And, if industry can't find this world-class talent, then the broader ecosystem needs to create it.

Diverting National Scholarship Winners to Technology-focused, Entrepreneurial pursuits

Many of the brightest students in the region are awarded scholarships to the world's best universities, contingent on them coming back home after graduation to work in government.

These students learn all about innovation & cutting-edge technologies, only to come back home to narrowly scoped public service roles. Instead, the governments could give these students opportunities to create innovative startups to tackle problems of national importance (e.g., revitalizing domestic agriculture, reducing crime, improving national security, export diversification, etc.). The government could make a nominal investment in the best proposals, take an ownership stake, and even enroll the founders in startup accelerator programs. Will most succeed? Probably not, but the successful ones could jumpstart entire industries. And the failures will still yield immense learnings, accelerating existing sectors.

Encouraging the Caribbean Public Sector to invest in Local Technology Development

If there are specific areas of importance to Caribbean governments, they could provide funding to local companies to help develop and accelerate technologies in these areas. The intent would be less about deploying full solutions, and more about demonstrating the functionality of future products with broad impact. An international example is USA's DARPA Challenges, which jump started the global self-driving car industry. This is fundamentally different from project tendering since several companies are funded to compete against one another in demonstrating a solution. From a robotics & AI perspective, some examples of initiatives could be focused on writing radar algorithms to identify illicit vessels in national waters, using drones to detect illegal quarrying, or developing IoT sensors to help smallhold farms increase yields.

Investing in Transformational Social Inclusion Projects

One interesting example is the Silicon Valley drone delivery startup Zipline. They deployed their first systems in Africa, enabling field clinics to receive critical blood supplies from central blood storage facilities, within 10s of minutes. This has significantly reduced mortality rates in the hardest to reach parts of Ghana & Rwanda. At Virtana, we're proud to be collaborating with companies like Zipline. However, it would be great to see the Caribbean investing in the development of inclusive technologies like this, both to improve the lives of people in the Caribbean and to create new technology exports.

What do you see as the role of Big Data in the Caribbean Tech Industry and Social Inclusion?

The proliferation of low-cost wireless IoT sensors now makes this technology practical to install in every home and vehicle. Each sensor can be used to generate 1000s of measurements daily, and this data can be used to create open datasets to keep public service providers accountable. For instance, IoT sensors can measure power consumption and water pressure measurements in every home. IoT GPS location sensors on police vehicles, fire trucks, & ambulances could help measure emergency response times to citizens. Vibration sensors and GPS sensors in vehicles could help insurance companies provide safe driver discounts, while also generating maps of the locations and sizes of potholes nationwide. This data can shift public narratives away from political party preferences and instead towards transparent, actionable plans to improve service delivery to all citizens, regardless of status or influence.

How can the Caribbean contribute to the Tech Industry globally?

I would love to see more tech created locally versus importing tech from abroad. Once we're creating locally, exporting tech internationally can follow. India



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jumpstarted its tech sector by exporting technology services, and the Caribbean can do the same. This means incentivizing foreign tech startups to operate from the Caribbean, welcoming foreign tech experts to work remotely from the Caribbean, and facilitating local students to acquire internships & experiences abroad. These formal and informal connections then embed the Caribbean into the global technology ecosystem. And these connections don't need to always be physical. While Virtana is physically based in Trinidad, it is thematically and philosophically a Silicon Valley business, operating with a Silicon Valley culture, with Silicon Valley clients.

What advice do you have for local engineers & high-tech entrepreneurs looking to export their services?

If you are able to build a world class team with world class expertise, then showcase your expertise & clients will seek you out. That is, find whatever technology area you or your business are passionate about, and push on becoming world class in that area, and then demonstrate that world class expertise in a public way (technical blog posts, open source contributions, YouTube technology demonstrations, etc.).

No matter how specialized or niche your specific area may be, being world class in any specific high-tech area will foster world class clients & world class pricing. This will also put you in front of the world's most challenging problems that will push you and your team to continue to build your own expertise.



Vijay Pradeep is a robotics engineer and angel investor, and has been involved in the robotics sector for the past 15 years. He is currently the founder & CEO of Virtana, a robotics software & development company in Trinidad and Tobago. He has worked for & consulted with Fortune 500 companies and startups in a variety of areas, including VR/AR, vehicle autonomy, medical imaging, drones, personal aviation, and industrial automation.

After his previous company, hiDOF, was acquired by Google, he joined their virtual reality organization as an engineering manager where he helped ship multiple new products. Vijay received his B.S. in Computer Systems, focusing on Robotics and Mechatronics, and his M.S. in Mechanical Engineering focusing on Control Systems, both from Stanford University.