**INTERVIEW**

**INTERVIEWER: BIKRAMJIT SINGH**

**INTERVIEWEE: SHOBHIT KHAJURIA**

**Bikramjit:** Hi! How are you?

**Shobhit:** I am good, what about you?

**Bikramjit:** I’m great, thank you for taking out time for this interview.

**Shobhit:** Not a problem.

**Bikramjit:** So let’s begin, can you please introduce yourself?

**Shobhit:** My name is Shobhit Khajuria and I am 23 years old. I am a physics graduate and currently pursuing a physics major at National Institute of Technology, Rourkela, (Physics and Astronomy).

**Bikramjit:** Great, can you elaborate your current work, like what does it include what is the main objective/interest?

**Shobhit:** My work includes a lot of mathematics as I want to become a theoretical physicist. My research interest is mainly in fundamental physics (foundation of physical laws) and trying to answer the fundamental questions of nature via theories or new ideas on how the nature actually works. The main job is to unify (combine) the laws of physics so that we have a single equation/rule which governs everything.

**Bikramjit:** That sounds impressive. The project I am working on, which is the reason for this interview, is about irrational numbers. Tell me in your field of work/study, which irrational numbers are you often encountered with?

**Shobhit:** In theoretical physics, we encounter a lot of the so called irrational numbers. The most frequent are “e” & “pi”. We can call them the fundamental dimensionless constants of nature or mathematical constants. Nearly all Equation are filled with them and there is a deep reason for that too. Another irrational number is the “golden ratio”, which too occurs in solution of equations and even has a link to architecture.

**Bikramjit:**Great, the goal of my project is to make a software (calculator) which can calculate the value of pi, can you tell me in your field of study, how often do u use a calculator, to help u get the values of such irrational numbers?

**Shobhit:** Oh, well I won’t say we need a calculator that often in my research. But on a scale of 1-10 (10- using it very often), I would say 6.

**Bikramjit:** Can you tell me how useful is the number “pi” in your field of study? Please mention some main areas where its value is most useful?

**Shobhit:** Very useful. It is one of the most popular constant. We all know that in basic mathematics Pi is used to find the area and circumference of the circle. In physics it is used in a lot of areas. As u asked for main areas, I would say quantum physics, communications, air travel, space flight (to calculate trajectories). A simple example time period of a simple pendulum T=2π\*√(l/g)

**Bikramjit:** Shobhit, how accurate u need the value of Pi in your research?

**Shobhit:** Up to 7-8 decimal places is fine for any measurable experiment. The most accurate prediction is of electron g factor and it requires π to be known to 8 or 9 places.

**Bikramjit:** Shobhit if I am making a calculator to calculator to calculate the value of pi, what operations do you think would be necessary to do that?

**Shobhit:** Well it is very difficult to do that. Easiest method I can think of is to somehow input precise values of circumference of a circle and diameter and then use the “/” operator to get the approximate value of Pi.

**Bikramjit:**Would you like this calculator to be a desktop application or mobile application? Why?

**Shobhit:** Oh that’s an easy one. Definitely a mobile application just because of the amount of time I spend on my mobile than my laptop or computer. Mobile phone is much more accessible to me.

**Bikramjit:** Which people do you think will find this calculator useful in their field of work?

**Shobhit:** Everyone whose work or research included circle or arcs, will need this calculator. Be it mathematicians or physicists or even people working in NASA.

**Bikramjit:**  Would you like to suggest a feature I should add in this calculator which you normally do not find in a regular calculator?

**Shobhit:** I remember once I used an online calculator which has a feature to see all your history, which my mobile calculator does not have, so I think that would be a cool feature to have.

**Bikramjit:** Great, that’s it. Thank you so much Shobhit for your valuable input. I appreciate it a lot.

**Shobhit:** You’re welcome Bikramjit. Glad I could contribute in your project.