

**ACM Goa  
Professional Chapter  
presents**

**Talk by  
Vipul Shah,**

# **Computational Thinking in Education: The Why, What and How**

**Date : 10th Oct 2023**

**Time: 5:00 pm - 6:00 pm**

**Venue: LH1, IIT Goa**

## **Abstract:**

Computing plays a bigger role in the lives of young people today than ever before. Yet, there is a widespread lack of knowledge of what constitutes the core of computing: is it just the use of word processors and spreadsheets or are there more fundamental principles that underlie this science? Digital Skills are becoming ubiquitous with Problem Solving, Critical Thinking and Analysis, Technology Design and Programming, Reasoning and ideation being identified as some of the top digital skills that are relevant for a person to be successful in the digital economy. It has been argued that not only is Computational Thinking a fundamental skill used by and useful for all but is a practice that is central to all sciences, not just computer science. So, what is computational thinking? What are different curricula and pedagogical approaches? In this talk, we will present the approach we have explored for grades 1-8 since 2016 and how we can extend the principles to higher education. I will also talk about the CT course offered by BSc programme in Programming and Data Science at IITM.

CSPathshala is an Association for Computing Machinery (ACM India) initiative, launched in 2016, to bring a modern computing curriculum, emphasising problem-solving and computational thinking, to Indian schools. To ensure ease of deployment of the curriculum, CSPathshala has created detailed teaching aids. The program has reached 15,000 teachers and over 600,000 students are learning computing using the CSPathshala curriculum. Additionally, 30,000 government schools in Tamil Nadu are implementing CT as part of the mathematics curriculum. CSPathshala has diverged from the traditional approaches of teaching computational thinking and uses a problem-solving approach based on discrete mathematics.

## **About the Speaker**



Vipul Shah, presently Heads Education and Skilling as part of Tata Consultancy Services (TCS), Global Corporate Social Responsibility (CSR). As part of this role, he is focusing on imparting 21st century skills to students, especially from rural and underrepresented communities, through TCS CSR programs. Prior to joining CSR, he was a Principal Scientist at the Software Engineering Research Lab at Tata Research Development and Design Centre (TRDDC), for 30 years. Mr. Shah's areas of interest have been language processing, modeling and model driven development, enterprise software testing and process modeling.

Mr. Shah has initiated and heads ACM India Council Education initiative, CSPathshala setup to devise and sustain initiatives to promote improved access and quality of K-12 computing education in India. He serves on the board of Bebras International Computing Challenge community and is also the national coordinator for Bebras Computational Thinking challenge which has seen participation upwards of 500,000 in the age groups 8-18 since 2018. Mr. Shah has conducted more than 75 awareness workshops and teacher training programs on Computational Thinking.



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