



Event Report

"Breaking Boundaries: The 2024 ICPC Asia Topi Online Programming Challenge"

GIK Institute of Engineering Sciences and Technology, in collaboration with ICPC Asia Topi, hosted the **2024 ICPC Asia Topi Online Preliminary Programming Contest** on November 16-17, 2024. This prestigious event marked a significant milestone in fostering programming talent and innovation, serving as a gateway to the Regional Onsite Contest scheduled for February 2025.

The contest commenced with an introductory talk by Dr. Masroor Hussain, Director ICPC Asia Topi, who welcomed participants and briefed them about the competition. He also addressed questions from the participants, setting a positive tone for the event. The contest attracted a remarkable 732 contestants, forming 244 teams from 30 universities across Pakistan. In addition, a guest team from CVR College of Engineering, India, added an international flavor to the competition. Table 1 shows the universities participating in the contest.

Following the inaugural session, the participants engaged in a two-hour mock contest, a preparatory session to acclimate them to the competition environment. The mock session paved the way for the main contest, held on November 17, 2024, which spanned an intense five hours. During this period, participants demonstrated their problem-solving and programming skills as they tackled a series of challenging problems.

Table 1. Universities Participating in the Programming Challenge

1	Ghulam Ishaq Khan Institute of Engineering Sciences and Technology
2	FAST National University of Computer and Emerging Sciences, Lahore
3	Sharif University of Technology
4	University of Gujrat
5	Habib University
6	Institute of Business Administration, Karachi
7	University of Central Punjab
8	FAST-National University of Computer and Emerging Sciences, Islamabad
9	FAST-National University of Computer and Emerging Sciences, CFD Campus
10	Namal College Mianwali
11	Institute of Business Administration, Karachi
12	National University of Modern Languages
13	NU-FAST Karachi
14	University of Management and Technology
15	FAST Institute of Computer Science
16	University of Education
17	Muhammad Ali Jinnah University



18	Information Technology University Punjab
19	University of Sargodha
20	NU-FAST Karachi
21	Bahria University, Islamabad
22	Forman Christian College Lahore
23	FAST-National University of Computer and Emerging Sciences Peshawar
24	FAST National University Faisalabad
25	Punjab University College of Information Technology
26	NED University of Engineering & Technology
27	Sir Syed University of Engineering and Technology
28	Jodhpur Institute of Engineering & Technology
29	Information Technology University Punjab
30	University of Engineering and Technology, Lahore
31	CVR College of Engineering, India

The contest concluded with an online closing ceremony hosted by Dr. Masroor Hussain and Ms. Iffat Maab, where the top-performing teams were announced. Team **The Codists** from NU-FAST, Karachi, mentored by Dr. Muhammad Rafi, claimed the first prize, followed by Team **Proxima** and **Game Over** from NU-FAST, Karachi, securing the second and third positions, respectively.

The competition featured a diverse range of problems that tested the participants' analytical and programming capabilities. These problems were meticulously designed by the judges to reflect real-world challenges and theoretical concepts:

- **Network Planning:** Designed by Dr. Arshad Islam, this problem focused on creating a robust network infrastructure for a university campus. Participants needed to determine the optimal location for a central router within a network of hostels modeled as an undirected graph, minimizing average communication delay while ensuring efficient connectivity.
- **Architectural Design:** Designed by Dr. Atif Mhedi, this problem required participants to help a landowner achieve symmetry in arranging commercial buildings along a road. They were tasked with determining the minimum changes needed to rearrange building designs into a symmetrical layout while minimizing costs.
- **Charging Your Electric Vehicle in Manhattan:** Designed by Dr. Syed Fawwad Hussain, this problem explored navigating Manhattan's iconic grid-like streets. Participants had to plan a route from the top-left to the bottom-right block, maximizing the electric charge their vehicles could accumulate while adhering to specific movement constraints.
- **The Quest of Mango Tree Network in Pakistan:** Designed by Dr. Usman Habib and inspired by the mango orchards of Multan, this problem involved mapping an ancient and interconnected network of mango trees. Participants had to find the longest path between two distant trees and identify the two most connected nodes in the network.



- **Survive the Zombie:** Set in a video game scenario by Dr. Usman Joya, this problem challenged participants to distribute defensive artifacts optimally among heroes to maximize survival rounds in a battle against a dragon. It required strategic allocation and calculations to achieve the best outcomes after each query.
- **Monkey Election:** Designed by Mr. Mutharib, this problem dealt with a voting system in a monkey house, where enclosures were connected in a tree structure. Participants needed to partition the enclosures into sections to maximize the voting results for Grumpy Gorilla while adhering to specific constraints.
- **Factory Assembly Line Optimization:** Designed by Mr. Adeel Cheema, this problem revolved around minimizing energy consumption in a factory with interconnected assembly lines. Participants had to determine the optimal sequence and grouping of workstations to achieve efficiency in production processes.

Other problems, including **Library Stack Organization** and **Pascal Key Breaker**, designed by Ms. Syeda Ayesha and Dr. Muhammad Hanif were equally thought-provoking. They highlighted the depth of computational challenges presented in the contest.

The contest was presided over by a distinguished panel of ten esteemed national and international judges and trainers, reflecting the event's prestige and commitment to excellence. The panel was expertly led by Chief Judge **Dr. Usman Habib** from FAST-NUCES, Islamabad, ensuring a meticulous evaluation process. Among the notable members were **Dr. Syed Fawad Hussain** from the University of Birmingham, UK and, **Ms. Ayesha Siddiq**a from Noon, Dubai. The panel also included prominent national experts such as **Dr. Muhammad Hanif** from GIK Institute, **Mr. Adeel Ashraf Cheema** from FAST-NUCES Faisalabad, **Dr. Syed Atif Mehdi** from Educative, **Dr. Arshad Islam** from FAST-NUCES Islamabad, **Dr. Usman Joya**, from the Khanpur Institute of Technology, **Dr. Yasir Niaz Khan** from Punjab Safe Cities Authority and **Mr. Mutharib Ayub** from Motive.inc. Their collective expertise and dedication ensured a fair and rigorous competition for all participants.

ICPC Asia Topi extends its heartfelt gratitude to the dedicated core team whose relentless efforts ensured the success of the event. Special acknowledgment goes to Dr. Masroor Hussain, Director of ICPC Asia Topi; Ms. Sarah Sajjad, Deputy Regional Contest Director; Mr. Ali Shaukat, Marketing Chair; and Dr. Usman Haider, Mr. Sajid Ali, Ms. Asima Sarwar and Mr. Shakir Ahmad, Systems Co-Chairs, for their exceptional contributions.

The organization also deeply appreciates the unwavering support of the judging committee and the university authorities, whose cooperation was instrumental in orchestrating this event. Key contributors include Prof. Dr. Fazal A. Khalid, Rector of GIK Institute; Prof. Dr. S. M. Hassan Zaidi, Pro-Rector (Academics); Sardar Aminullah Khan, Pro-Rector (Administration & Finance); Prof. Dr. Qadeer Ul Hassan, Dean of the Faculty of Computer Sciences and



Engineering; and the Director of IT. Their steadfast commitment and collaboration were pivotal to the event's success.

Special appreciation goes to the **Higher Education Commission, Pakistan**, for their generous sponsorship without whose support the event would not have been possible.

The 2024 ICPC Asia Topi Online Preliminary Programming Contest was a resounding success, showcasing the collaborative spirit, technical acumen, and sportsmanship of the brightest minds in Pakistan's programming community. We extend our gratitude to all participants, sponsors, and collaborators who made this event a beacon of excellence.



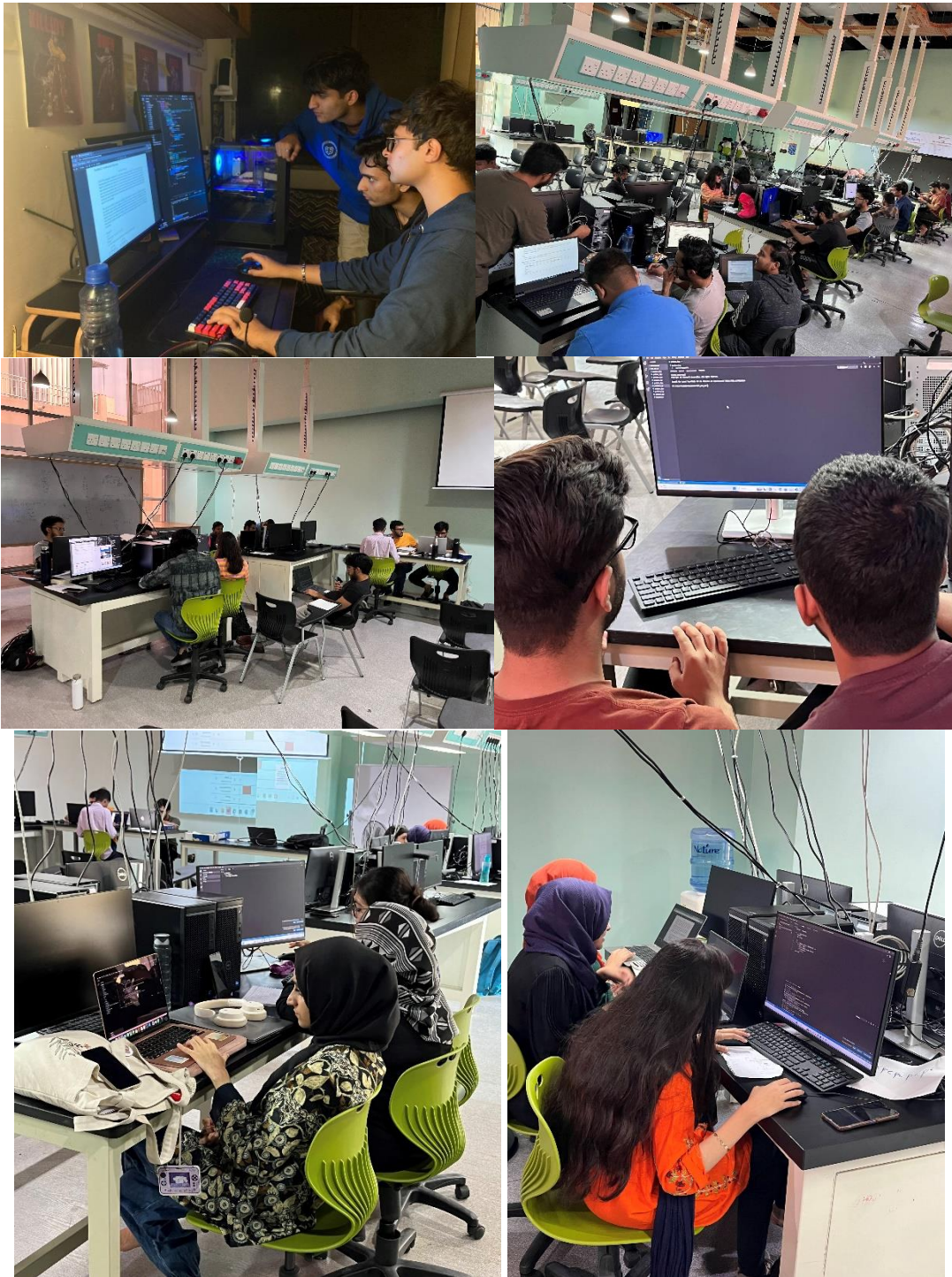
Snapshot Glimpse of the Event

Lab view of teams participating FAST-NUCES, Islamabad





Lab view of teams participating from GIKI and Habib University, Karachi





Closing Ceremony hosted by Dr. Masroor Hussain and Dr. Iffat Maab

The 2024 ICPC Asia Topi Online Preliminary Event

Self Introduction

Iffat Maab
 Project Researcher, National Institute of Informatics, Tokyo
 PhD, The University of Tokyo, Japan
 MS, GIK Institute
 BS, UET Taxila
 Associate Director, ICPC Asia Topi

Links
<https://mil-yamagishilab.github.io/author/iffat-maab/>
<https://scholar.google.com/citations?user=9FYFWsAAAA&hl=ja>
<https://www.linkedin.com/in/iffat-maab-671b34147/>

Fact-Checking – Current Research

Supports Refutes Not Enough Information

Supervised Approach
 Data Source
 Train Data Test Data
 Model Fine Tuning
 Prediction

LLM Approach
 Prompt
 LLM
 Prediction

Students interested in collaborating on research projects are encouraged to reach out to me!

Important Dates

Onsite Regional Contest: 1st-2nd Feb 2025
 Last Date of Registration: 24th-Dec-2025
 Asia West Finals: - End of Feb (tentative)

Scoreboard View: Top 12 teams of the contest

RANK	TEAM	SCORE	1_NP	2_AD	3_LS	4_EV	5_KB	6_MT	7_SZ	8_ME	9_FA
1	Participants The Codists NU-FAST Karachi	8 845	102 3 tries	59 1 try	48 2 tries	29 1 try	72 1 try	141 3 tries	195 1 try		99 1 try
2	Proxima NU-FAST Karachi	8 890	152 5 tries	43 1 try	180 2 tries	5 1 try	53 1 try	88 4 tries	131 1 try		78 1 try
3	Game Over 1 NU-FAST Karachi	8 907	123 6 tries	38 1 try	132 1 try	16 1 try	78 1 try	93 2 tries	231 1 try		76 1 try
4	Data Strugglers Punjab University College of Information Technology	8 948	118 7 tries	82 2 tries	106 5 tries	17 1 try	90 1 try	69 1 try	189 1 try	1 try	57 1 try
5	BGT FAST National University of Computer and Emerging Sciences, Lahore	8 990	37 2 tries	142 1 try	104 1 try	67 1 try	39 1 try	197 3 tries	226 3 tries	2 tries	58 2 tries
6	duo box Ghulam Ishaq Khan Institute of Engineering Sciences and Technology	8 1014	10 1 try	24 1 try	110 4 tries	43 1 try	57 1 try	232 8 tries	224 1 try	4 tries	114 1 try
7	3AM National University of Science and Technology	8 1213	237 19 tries	46 1 try	67 5 tries	7 1 try	34 1 try	125 3 tries	167 1 try		50 1 try
8	0 or 1 FAST-National University of Computer and Emerging Sciences	7 569	17 1 try	62 1 try	95 1 try	14 1 try	150 3 tries	53 4 tries			38 3 tries
9	Indus Viper NU-FAST Karachi	7 615	179 4 tries	29 1 try	108 1 try	48 1 try	62 1 try	91 1 try		2 tries	38 1 try
10	Mortals Ghulam Ishaq Khan Institute of Engineering Sciences and Technology	7 641	224 9 tries	20 1 try	51 2 tries	19 1 try	45 1 try	58 2 tries	4 tries		24 1 try
11	GameOver 2 Institute of Business Administration, Karachi	7 664	21 1 try	119 1 try	144 1 try	43 3 tries	51 1 try	138 3 tries	1 try		68 1 try
12	e=pi=Vg Ghulam Ishaq Khan Institute of Engineering Sciences and Technology	7 773	145 9 tries	18 1 try	124 5 tries	17 1 try	62 2 tries	73 3 tries	1 try		34 1 try