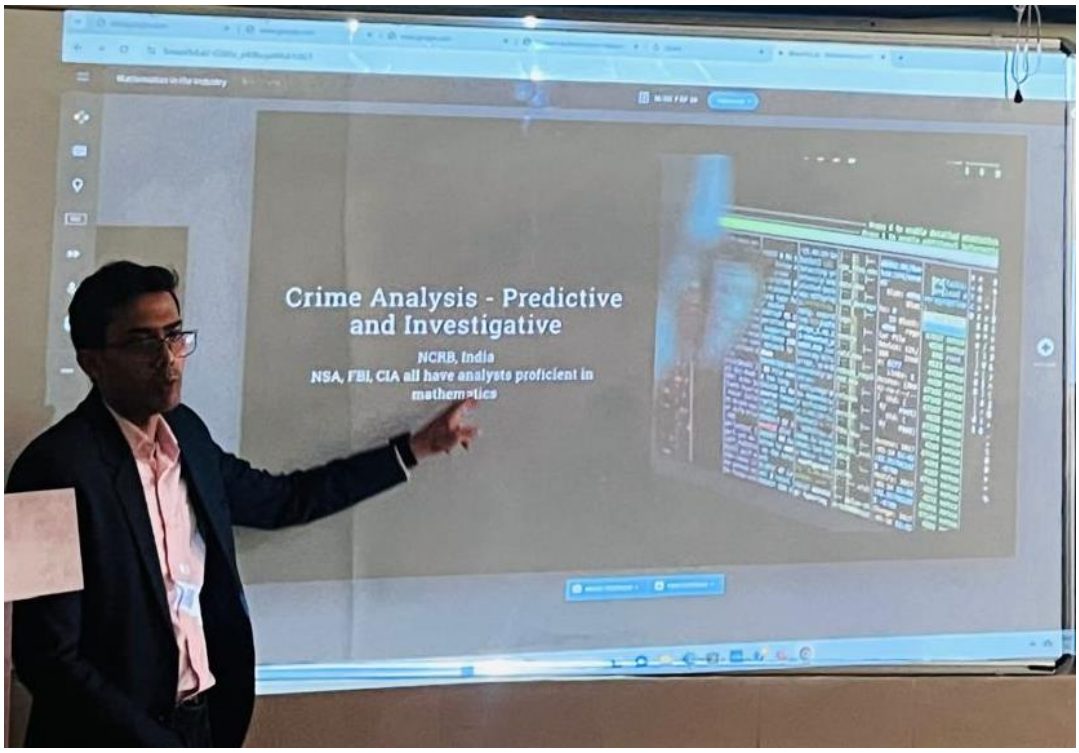
Report on Industrial-Expert Lecture I: "Mathematics in the Industry" by Mr. Archit Ojha

Date: 08/08/2024

Venue: Computational Lab, Dept of Mathematics

Speaker: Mr. Archit Ojha, Product Manager, NucleusTeq Inc., Phoenix, Arizona



Summary:

Mr. Archit Ojha delivered a compelling talk on "Mathematics in the Industry," highlighting the pivotal role of mathematical principles in real-world industrial applications. With his extensive experience as a Product Manager at NucleusTeq Inc., Mr. Ojha provided valuable insights into how mathematics drives innovation and efficiency in various sectors.

Key Points:

- **Mathematical Applications:** Practical use of mathematics in solving industry challenges.
- **Case Studies:** Real-world examples from NucleusTeq Inc.
- **Challenges:** Addressing issues in applying mathematical concepts.
- **Future Trends:** Upcoming areas where mathematics will impact industry.

The talk was engaging and informative, providing valuable insights into the practical applications of mathematics in industry.

Report on Industrial-Expert Lecture II: "Some Recent Advances in Differentially Private Continual Observation" by Dr. Jalaj Kumar Upadhaya

Date: 09/08/2024

Venue: Computational Lab, Dept of Mathematics

Speaker: Dr. Jalaj Kumar Upadhaya, Assistant Professor, Rutgers University, USA and former senior researcher in the privacy team of Apple

Overview:

Dr. Jalaj Kumar Upadhaya delivered an insightful talk on "Some Recent Advances in Differentially Private Continual Observation," presenting recent developments and research in the field of differential privacy. The talk focused on innovative methods and applications of differential privacy in the context of continual observation, a critical area in ensuring data privacy in dynamic environments. In particular, his idea of converting a data structure problem to a mathematical problem (i.e., matrix theory problem) is interesting.

Key Points:

- **Differential Privacy Overview:** Introduction to the concept and its significance.
- **Challenges:** Issues in continual observation and the need for adaptive privacy solutions.
- **Recent Advances:** New algorithms and improved mechanisms for dynamic data privacy.

- **Applications:** Real-world examples demonstrating the effectiveness of these advancements such as social media analytics and continuous health monitoring, while preserving user privacy.
- **Future Directions:** Potential areas for further research and interdisciplinary collaboration.

The talk was engaging and well-received, offering valuable insights into enhancing privacy protections in ongoing data collection scenarios.