

1 Conclusions

The field of algorithms for random variates generation plays a pivotal role in diverse applications, spanning statistics, computer science, finance, and more. Through a comprehensive exploration of various methods, we have witnessed the versatility and adaptability of these techniques in generating random variables that adhere to specific probability distributions.

Each method presents its own set of advantages and disadvantages. The Inverse Transform Method stands out for its simplicity, while the Composition and Convolution Methods offer powerful tools for combining and manipulating distributions. The Acceptance-Rejection Method provides a versatile approach, losing a bit in computational efficiency.

As technology advances and computational resources grow, researchers continue to refine existing methods and develop new algorithms for generating random variates. These advancements not only contribute to the theoretical foundations of probability and statistics but also find practical applications in fields where realistic simulations and modeling are crucial.