

Forensic science is typically concerned with past events. The evidence of such events is usually fragmentary and not very reliable, while the events themselves tend to be unique and non-repeatable. Uncertainty is a fundamental problem underlying all forensic sciences. Probability theory has a long and not entirely successful history of being used to express uncertainty of forensic findings. Probability theory was invented as a method of analysing games of chance and was subsequently adapted and applied to the analysis of real-world processes and phenomena. Owing to its roots in the games of chance, probability theory requires the problem domain to be defined - either explicitly or implicitly - in terms of the joint probability distribution over the sample space, which may not be easy to do in the real-world applications. Fortunately, computer systems and algorithms have much more in common with the games of chance, which makes some digital forensic problems amenable to probabilistic analysis, and perhaps more so than classical forensic analysis.

Following a brief recap of key concepts from the probability theory, this workshop will discuss some examples of probabilistic reasoning in digital forensics and associated inference tools.