

# Overwriting Hard Drive Data: The Great Wiping Controversy

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**Abstract.** Often we hear controversial opinions in digital forensics on the required or desired number of passes to utilize for properly overwriting, sometimes referred to as wiping or erasing, a modern hard drive. The controversy has caused much misconception, with persons commonly quoting that data can be recovered if it has only been overwritten once or twice. Moreover, referencing that it actually takes up to ten, and even as many as 35 (referred to as the Gutmann scheme because of the 1996 Secure Deletion of Data from Magnetic and Solid-State Memory published paper by Peter Gutmann) passes to securely overwrite the previous data. One of the chief controversies is that if a head positioning system is not exact enough, new data written to a drive may not be written back to the precise location of the original data. We demonstrate that the controversy surrounding this topic is unfounded.

**Keywords:** Digital Forensics, Data Wipe, Secure Wipe, Format.

## 1 Introduction

Often we hear controversial opinions on the required or desired number of passes to utilize for properly overwriting, sometimes referred to as wiping or erasing, a modern hard drive. The controversy has caused much misconception, with persons commonly quoting that data can be recovered if it has only been overwritten once or twice. Moreover, referencing that it actually takes up to ten, and even as many as 35 (referred to as the Gutmann scheme because of the 1996 Secure Deletion of Data from Magnetic and Solid-State Memory published paper by Peter Gutmann, [12]) passes to securely overwrite the previous data.

One of the chief controversies is that if a head positioning system is not exact enough, new data written to a drive may not be written back to the precise location of the original data. This track misalignment is argued to make possible the process of identifying traces of data from earlier magnetic patterns alongside the current track.

This was the case with high capacity floppy diskette drives, which have a rudimentary position mechanism. This was at the bit level and testing did not consider the accumulated error.