

Bye-Bye Counterfeits: PrinTracker Traces Origin of 3D Printed Goods

A STUDY by researchers at the University at Buffalo has proposed a new method for accurately tracking a 3D printed object back to the machine it came from.

Called “PrinTracker,” the new process could help law enforcement and intelligence agencies track 3D printed guns, counterfeit products and other goods.

“3D printing has many wonderful uses, but it’s also a counterfeiter’s dream. Even more concerning, it has the potential to make firearms more readily available to people who are not allowed to possess them,” said lead author, Associate Professor Wen Yao Xu.

3D printers move back-and-forth while printing an object. Instead of ink, a nozzle discharges a filament, such as plastic, in layers until a 3D object forms.

Each layer of a 3D printed object contains tiny submillimeter wrinkles called in-fill patterns. These patterns are supposed to be uniform.

However, the printer’s model type, filament, nozzle size and other factors cause slight imperfections in the patterns. The result is an object that does not match its design plan.

Like a fingerprint to a person, these patterns are unique and repeatable. As a result, they can be traced back to the 3D printer.

To test PrinTracker, the research team—which includes coauthors from Rutgers University and Northeastern University—created five door keys each from 14 common 3D printers.

With an inkjet scanner, the researchers created digital images of each key. From there, they enhanced and filtered each image, identifying elements of the in-fill pattern.

They then developed an algorithm to align and calculate the variations of each key to verify the authenticity of the fingerprint.

Having created a fingerprint database of the 14 3D printers, the researchers were able to match the key to its printer 99.8% of the time—even 10 months later!

The team also ran experiments involving keys damaged in various ways to obscure their identity. To their delight, the PrinTracker proved to be 92% accurate in these tests. ●



PELLETS LLC

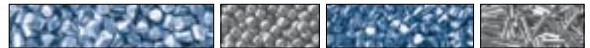
FIRST IN CUT WIRE SHOT
ISO 9001: 2000 Certified

A CUT ABOVE THE REST

Number one in cut wire shot since first pioneering the process nearly 60 years ago. Product quality, consistency and durability combined with knowledge, customer service and delivery still make us number one today.

CALL 1.800.336.6017 TODAY FOR MORE INFORMATION, OR VISIT WWW.PELLETSLLC.COM

SAE J441 | AMS-S-13165 | AMS 2431 | VDF1-8001 | BAC-5730 | MIL-S-851D



STAINLESS STEEL | ZINC | CARBON STEEL | ALUMINUM | COPPER

Take Control of Your Media WITH PROFILE SPIRAL SEPARATORS

REMOVE broken media, leaving predominately round media for a controlled, effective shot peening process

SEPARATE round from non-round metal abrasives, metal shot, ceramic beads, glass beads and more

SAVE money on media—recycle it for a cost savings

PROTECT expensive parts from damage by broken media

LIMIT wear to machine parts from broken media

EXCEED SAE AMS 2430 requirements

Call 1-763-428-5858 today



PROFILE INDUSTRIES
SPIRAL SEPARATORS MANUFACTURER

1-763-428-5858 www.profile-ind.com | sales@profile-ind.com
14525 James Road, P.O. Box 370, Rogers, Minnesota 55374 USA