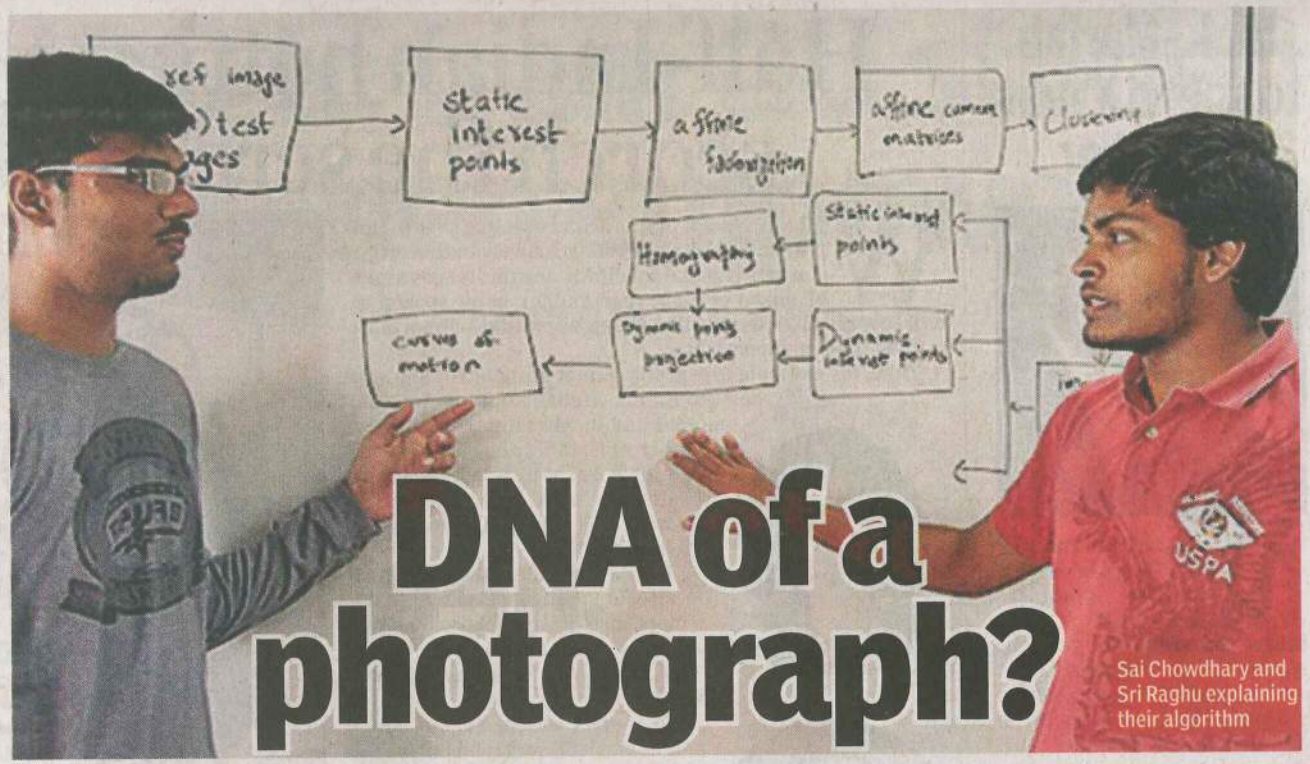


DNA of a photograph?

Sai Chowdhary and Sri Raghu explaining their algorithm

IITGn students develop software to link a photo to its camera

Sangeeta Rane @SangeetaCRane

Indian Institute of Technology Gandhinagar (IIT Gandhinagar) students have made a breakthrough that could help confirm claims of ownership and copyrights of photographs. For the first time, an algorithm has been developed by the students that can identify fingerprints of digital cameras and match it with those embedded in every photograph it captures.

Third year BTech student Sri Raghu who is part of the team that developed the algorithm said, "No two cameras are the same. Each camera has a unique set of characteristics because of elements such as sensors, focus, shutter and so on that differentiates it from other cameras. When minutely observed, the two sensors of two cameras of the same make and models are not similar. Like every human has unique fingerprints, the unique matrix of every camera leaves its trail in every picture it shoots."

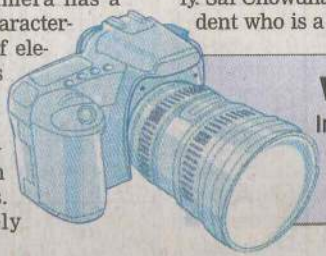
The students will run photographs through a computer program developed with their algorithm to identify the matrix of the camera. The picture which needs to be confirmed will also be run through the program.

Under the guidance of Shanmuganathan Raman, the project began in 2013 with Gagan Kanojia who graduated recently. Sai Chowdhary, a BTech student who is a part of the project said, "We decided to continue the project which was initiated by our senior as part of the summer research internship at IIT Gandhinagar.

There are programs revealing properties about a digital picture such as the shutter speed, the aperture, exposure and the model of the camera. But until now there has been no such program that could identify not only just the model number of the camera but the precise camera within the model with which a photograph has been shot. Once the algorithm is fool-proof we will develop software that can easily relate images with the camera it was shot with."

> *Each camera has unique set of characters and elements such as sensors, focus, shutter etc. that differentiates it from other cameras*
>
> **SRI RAGHU,** *3rd year BTech student*

The project has been selected for a poster presentation at the '10th International Symposium on Visual Computing' in Las Vegas, USA. The Symposium which is supported by various organisations including National Aeronautics and Space Administration (NASA) is being currently held from Dec 8 -10. A paper by the students on their work called 'Who Shot the Picture and When?' will be published as a chapter in a book called "Advances in Visual Computing" by publisher, Springer.



WHAT IS MATRIX OF A CAMERA?

In bare minimum terms, a camera matrix captures 3 dimensional (3D) points from the world around us and convert them to dimensional (2D) for photographic images.