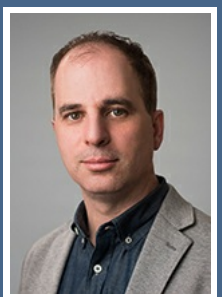
Finding the Truth in Photography



James O'Brien
Professor , Computer Science

CURRENT RESEARCH

Using geometric content analysis to detect doctored photos

Your friend posts pictures of a gruesome scene in some far off country and urges you to act now and help. What you and your friend don't realize is you've both been duped - the photos are fake. Photographs can no longer be trusted. Forged images have appeared in tabloid magazines, mainstream media outlets, political attacks, scientific journals, and the hoaxes that land in our email inboxes. These doctored photographs are appearing with growing frequency and sophistication, and even experts often cannot rely on visual inspection to distinguish authentic images from forgeries.

In addition to the ethical, political, and legal implications raised by this lack of trust in photography, studies have shown that doctored photographs can alter our own memories of actual events. In one such study participants were shown original and doctored photographs of memorable public events at which they were present. The doctored photographs, showing either larger crowds or more violence, changed the way in which participants later recalled the events. This surprising finding is due to a number of factors including our natural acceptance of visual images and our general inability to easily detect doctored photographs.

The need for forensic techniques for exposing photo fakery is, therefore, critical. Professor James O'Brien and his research group at UC Berkeley are working on developing tools for forensic image analysis to expose forgeries in images. These methods focus on finding inconsistencies in the geometric relationships among objects depicted in a photograph - an approach called geometric content analysis. The geometric relationships in the 2D image correspond to the projection of the relations that exist in the...

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AFFILIATION

University of California, Berkeley

EDUCATION

- Ph.D. in Computer Science, 2000 , Georgia Institute of Technology
- B.S. in Computer Science, 1992 , Florida State University

AWARDS

- SIGGRAPH Impact Award
- Technology Review TR100
- Sloan Fellowship
- College of Engineering Distinguished Alumni, Florida International University
- GVU 15 Year Impact Award

RESEARCH AREAS

Technology, Photonics / Imaging

FUNDING REQUEST

Forensic analysis of images and video is a relatively new field of study. Furthermore within this field, geometric content analysis is even less developed. The proposed work has the potential to create tools with broad societal benefit, and to establish new methods and practices in areas including reporting, science, and law enforcement. Funding for this research would help Dr. O'Brien and his team reach these goals.