Shruti Agarwal

CONTACT INFORMATION

+1(401)651-7667
shruti_agarwal@berkeley.edu
https://agarwalshruti15.github.io/webpage/

RESEARCH INTERESTS

Multimedia Forensics, Image Analysis, Machine Learning and Computer Vision.

EDUCATION

University of California at Berkeley (UCB), Berkeley, California USA **2018 - present**

Ph.D., Computer Science (expected graduation: 2021)

- Advisor: Prof. Hany Farid

Dartmouth College, Hanover, New Hampshire USA **2015 - 2018**

Ph.D., Computer Science (transferred to UCB)

- Advisor: Prof. Hany Farid

Indian Institute of Technology Delhi (IIT Delhi), Delhi, India **2010 - 2012**

M. Tech., Computer Science; CGPA: 9.5/10.0

- Thesis: A New Consistency Measure using Shape from Shading (SFS) for Dense 3D Reconstruction Paradigm.
- Advisor: Prof. Subhashis Banerjee and Prof. Prem Kalra

Harcourt Butler Technological Institute, Kanpur, India **2006 - 2010**

B.Tech., Computer Science; Percentage: 79.92%

PUBLICATIONS

S. Agarwal, H. Farid, Y. Gu, M. He, K. Nagano, and H. Li. Protecting World Leaders Against Deep Fakes, Workshop on Media Forensics at CVPR, Long Beach, CA, 2019. (pdf)

B. Lorch, **S. Agarwal**, and H. Farid. Forensic Reconstruction of Severely Degraded License Plates, IS&T Electronic Imaging, San Francisco, CA, 2019. (pdf)

W. Fan, **S. Agarwal**, and H. Farid. Rebroadcast Attacks: Defenses, Reattacks, and Redefenses, European Signal Processing Conference (EUSIPCO), Rome, Italy, 2018. (pdf)

S. Agarwal, W. Fan, and H. Farid. A Diverse Large-Scale Dataset for Evaluating Rebroadcast Attacks. IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Calgary, Alberta, Canada, 2018. (pdf)

S. Agarwal and H. Farid. A JPEG Corner Artifact from Directed Rounding of DCT Coefficients. TR2018-838, Department of Computer Science, Dartmouth College, 2018. (pdf)

S. Agarwal and H. Farid. Photo forensics from JPEG dimples. 2017 IEEE Workshop on Information Forensics and Security (WIFS), Rennes, 2017, pp. 1-6. (pdf)

S. Agarwal, D. Tran, L. Torresani and H. Farid. Deciphering Severely Degraded License Plates, IS&T Electronic Imaging, San Francisco, CA, 2017, pp. 138-143(6). (pdf)

IN THE NEWS (SELECTED)

Moments of untruth: Using technology to expose digital deception, Berkeley Engineering, 10.15.19

Race to defuse deepfake videos: UC Berkeley researchers creating software for newsrooms, abc7, 07.08.19

UC Berkeley researchers develop technique for detecting AI video simulations, The Daily California, 07.05.19

The fight to stay ahead of deepfake videos before the 2020 US election, CNN Business, 06.12.19

Researchers use facial quirks to unmask 'deepfakes', Berkeley News, 06.18.19

Invited Talks

Creating, Weaponizing, and Detecting Deep Fakes at Digital Humans and Deep Fakes: Creative Promise and Peril, SMPTE Hollywood section, 11.19

Creating, Weaponizing, and Detecting Deep Fakes at Fall UC Cyber Security Summit, 10.19

Creating, Weaponizing, and Detecting Deep Fakes at Vision Industry and Technology Forum, Embedded Vision Alliance, Santa Clara, 09.19

Creating, Weaponizing, and Detecting Deep Fakes at Deepfake Workshop, Microsoft, Redmond, 09.19

Skills

Machine Learning and Computer Vision
PyTorch, Keras, Caffe, Pandas, OpenCV, OpenFace

Languages
Python, MATLAB, C++, HTML

Tools
Photoshop, Illustrator, Linux Shell, LaTeX

Professional Experience

Adobe Systems India Private Limited, Noida, India **2012 - 2015**
Member of Technical Staff (MTS II), Adobe Illustrator

My role involved algorithm designing, coding, technical brainstorming, and technical designing. The main contributions were towards developing touch-optimized workspace and Live Corner features in Adobe Illustrator.
https://helpx.adobe.com/illustrator/how-to/draw-touch-environment.html
https://helpx.adobe.com/illustrator/how-to/live-corners-in-illustrator.html

Academic Experience

Dartmouth College, Hanover, New Hampshire USA **2015 - 2016**
Teaching Assistant (TA)

Introduction to Programming and Computation (CS 1) Fall 2015, CS 1 Winter 2016, and Numerical, and Computational Tools for Applied Science (CS 70/170) Spring 2016. Duties included holding office hours, grading, and leading weekly computer lab exercises.

IIT Delhi, Delhi, India **2010 - 2012**
Teaching Assistant (TA)

Introduction to Digital Image Processing, Introduction to Logic Programming, and Introduction to Computer Network courses. I helped in evaluating student assignments and exam papers.

Conference Presentations

S. Agarwal, H. Farid, Y. Gu, M. He, K. Nagano, and H. Li. "Protecting World Leaders Against Deep Fakes" in Workshop on Media Forensics at CVPR, CA, USA, July 2019.

W. Fan, S. Agarwal, and H. Farid. "Rebroadcast Attacks: Defenses, Reattacks, and Redefenses" in European Signal Processing Conference (EUSIPCO), Rome, Italy, September 2018.

S. Agarwal, W. Fan, and H. Farid. "A Diverse Large-Scale Dataset for Evaluating Rebroadcast Attacks" in IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Calgary, Alberta, Canada, April 2018.

S. Agarwal and H. Farid."Photo forensics from JPEG dimples" in 2017 IEEE Workshop on Information Forensics and Security (WIFS), Rennes, December 2017.

S. Agarwal, D. Tran, L. Torresani and H. Farid. "Deciphering Severely Degraded License Plates" in Electronic Imaging, Media Watermarking, Security, and Forensics, CA, USA, February 2017.

Honors and Awards

Winner of the Dartmouth Rendering Competition 2018.

Best Poster Award, Computer Science Research Symposium, Dartmouth College, 2016.

MHRD (Ministry of Human Resource Development, Government of India) Scholarship towards master's degree, 2010-2012.

Courses

	UC Berkeley	
COMPSCI 282A:	Designing, Visualizing, and Understanding Deep NN	John Canny
DATA 200:	Principles & Techniques of Data Science	Joshua A. Hug, Fernando Perez, Scott Lee
	Dartmouth College	
CS 187:	Rendering Algorithms	Wojciech Jarosz
CS 174:	Machine Learning and Statistic Analysis	Qiang Liu
CS 258:	Advanced OS	Sergey Bratus
CS 177:	Computer Graphics	Wojciech Jarosz
CS 170:	Numerical and Computational Tools for Applied Science	Hany Farid
CS 189:	Topics in Applied Computer Science - Visual Recognition	Lorenzo Torresani
CS 189.15:	Computational Aspects of Digital Photography	Wojciech Jarosz