

Eric Wengrowski, PhD

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EDUCATION

Rutgers University

Piscataway, NJ

PhD, Electrical and Computer Engineering

May 2019

Concentration in Computer Vision & Machine Learning

Thesis Title: *Methods For Photographic Steganography and Radar Object Shape Inference*

GPA: 3.9/4.0

Rutgers University, School of Engineering

Piscataway, NJ

Bachelor of Science, Electrical and Computer Engineering

May 2013

Concentration in Robotics & Computer Vision

WORK EXPERIENCE

Founder and CEO - Steg AI

2019 - Present

Irvine, CA

Founded B2B forensic watermarking technology company. Brought company from idea stage through product-market-fit. Established and grew recurring revenue from enterprise customers in consumer electronics, technology, entertainment, and consumer products. Grew the team beyond a dozen employees. Raised over \$10M in venture, angel, and non-dilutive funding. Executed an exclusive technology license with Rutgers University in 2023.

Postdoctoral Researcher - NYU

2020

Researching computational image forensics in collaboration with Professor Pawel Korus and Professor Nasir Memon.

Computer Vision Research Intern - Siemens

2017

Princeton, NJ

Designed and trained a fully-convolutional dense neural network for automated mediastinal lymph-node detection in CT scans, under Dr. Dorin Comaniciu and Dr. Bogdan Georgescu.

Computer Vision Research Intern - Kitware

2016

Clifton Park, NY

Developed reflectance-based image authentication algorithms for the DARPA MediFor image forensics program, under Dr. Anthony Hoogs and Dr. Zhaohui Harry Sun.

Research Intern - Microsoft Research

2015

Redmond, WA

Interactive Visual Media Group, led by Dr. Richard Szeliski and Dr. Michael Cohen; mentored by Krishnan Ramnath.

Computer Vision Software Engineer Intern - Startup

2014

San Francisco, CA

Developed dense 3D reconstruction for the company's flagship product, including SLAM improvements to Google Tango, Kinect 2.0, camera geometry, Android, and H.264/MPEG compression.

AT&T Labs - Technical Intern

2012

Middletown, NJ

Built an OPNET network simulation model of link and node failures across the AT&T Common Backbone IP network.

United States Army Corps of Engineers - Coastal Engineering Intern

2011

New Jersey Air National Guard Base, William J. Hughes FAA Technical Center, Philadelphia District, Pomona, NJ

Designed coastal structures and inspected construction, dredging, and explosive munitions. Negotiated contracts as liaison between USACE and contractors.

PUBLICATIONS

DeepFakeShield: A Proactive Defense Against Malicious Face Swapping *Published in CVPR 2026 Findings*

Authors: Saeed Karimi-Bidhendi, Joseph DeGol, **Eric Wengrowski**, Dominic Roberts, Kristin Dana.

We introduce DeepFakeShield, a proactive defense that protects face images from being used in malicious face-swapping deepfakes.

Why Don't You Clean Your Glasses? Perception Attacks with Dynamic Optical Perturbations *arXiv 2023*

Authors: Yi Han, Matthew Chan, **Eric Wengrowski**, Zhuohuan Li, Nils Ole Tippenhauer, Mani Srivastava, Saman Zonouz, Luis Garcia.

Light Field Messaging with Deep Photographic Steganography

Published in CVPR 2019

Authors: **Eric Wengrowski**, Kristin Dana.

Light Field Messaging (LFM) is a process of embedding, transmitting, and receiving hidden information in video that is displayed on a screen and captured by a handheld camera. We created the Camera-Display 1M dataset of 1,000,000 camera-captured images collected from 25 camera-display pairs. The result of this work is a high-performance real-time LFM system using consumer-grade displays and smartphone cameras. Presented as a live demo at CVPR 2019.

Deep Convolutional Neural Networks as a Method to Classify Rotating Objects based on Monostatic Radar Cross Section *Published in IET Radar, Sonar, and Navigation in 2019*

Authors: **Eric Wengrowski**, Matthew Purri, Kristin Dana, and Andrew Huston.

We address the challenging problem of determining shape class using monostatic RCS estimates collected as a time series from a rotating object tumbling with unknown motion parameters under detectability limitations and signal noise. We constructed datasets containing over 100,000 simulated RCS signals belonging to different shape classes. We show that a feed-forward CNN can be trained to successfully classify object shape using only noisy monostatic RCS signals with unknown motion.

Reflection Correspondence for Exposing Photograph Manipulation

Published in IEEE ICIP 2017

Authors: **Eric Wengrowski**, Z. Harry Sun, Anthony Hoogs.

Modern photo editing software like Photoshop has made it difficult to trust the authenticity of digital images. In response, image forensic techniques have emerged to detect photo manipulations. When jpeg-based authentication methods fail, a photograph's integrity can be examined by checking if scene geometry is preserved in reflections.

Reading Between the Pixels: Photographic Steganography for Camera Display Messaging

Authors: **Eric Wengrowski**, Kristin Dana, Marco Gruteser, Narayan Mandayam. *Published in IEEE ICCP 2017*

We exploit human color metamers to send light-modulated messages decipherable by cameras, but camouflaged to human vision. These time-varying messages are concealed in ordinary images and videos. We learn an ellipsoidal partitioning of the 6-dimensional space of base colors and color gradients. This partitioning creates metamer sets defined by the base color of each display pixel and the corresponding color gradient for message encoding. Ordinary displays and cameras are used, so there is no need for high speed cameras or displays.

Optimal Radiometric Calibration for Camera-Display Communication

Published in IEEE WACV 2016

Authors: **Eric Wengrowski**, Wenjia Yuan, Kristin Dana, Ashwin Ashok, Marco Gruteser, Narayan Mandayam.

We present a novel method for communicating between a moving camera and an electronic display by embedding and recovering hidden, dynamic information within an image. Detecting and decoding the message requires careful photometric modeling for computational message recovery. The key innovation of our approach is an algorithm that performs simultaneous radiometric calibration and message recovery in one convex optimization problem. By modeling the photometry of the system using a camera-display transfer function (CDTF), we derive an *optimal online radiometric calibration (OORC)* for robust computational messaging as demonstrated with nine different commercial cameras and displays.

High-Rate Flicker-Free Screen-Camera Communication with Spatially Adaptive Embedding

Authors: Viet Nguyen, Yaqin Tang, Ashwin Ashok, Marco Gruteser, Kristin Dana, Wenjun Hu, **Eric Wengrowski**, Narayan Mandayam. *Published in IEEE INFOCOM 2016*

We investigate a new visible light communication method, in which messages are embedded inside high frame rate videos and decoded by high speed cameras. This method preserves the quality of original videos, while offering a high information-transferring capability. We propose a video content adaptive encoding method that produces videos which have near-zero flicker while being decodable by high speed cameras.

PATENTS

Deepfake Shielding of Images Provisional - USPTO serial number 63/783,936	2025
Light-field messaging to embed a hidden message into a carrier US Granted - US11790475B2	2023

GRANTS

NSF SBIR Phase I, II, & IIB PI for National Science Foundation (NSF) Small Business Innovation Research (SBIR) Phase I, II, and IIB awards. <i>Novel photographic steganography to reduce digital piracy on live streaming platforms.</i> Funded development of Steg AI's photographic steganography from research prototype to a commercial forensic watermarking product.	Award Amount: \$1,725,000.00
NSF I-Corps - Invisible Light Field Messaging Entrepreneurial Lead (Principal Investigator: Kristin Dana, Rutgers University; Award Number: 1907550). Silicon Valley cohort, Winter 2019. Conducted 105+ customer discovery interviews in 7 weeks to explore commercialization of light-field messaging.	Award Amount: \$50,000.00
Nvidia Academic Hardware Grant Awarded in August 2015.	Award: Titan X GPU

TEACHING

Lecturer and Teaching Assistant - Rutgers ECE Part-Time Lecturer for the joint undergraduate/graduate Robotics and Computer Vision course with Professor Peter Meer. Led labs for 100+ students in Principles of Electrical Engineering I and Programming Methodology I, assisted Professor Kristin Dana in Robotics and Computer Vision, and guest lectured on deep learning and capstone design.	2013 - 2019
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AWARDS

Edison Patent Award (Emerging Technology) - R&D Council of New Jersey	2025
Rutgers Innovation Award - Artificial Intelligence / Digital Innovation	2024
LDV Summit Entrepreneurial Computer Vision Challenge (ECVC) Winner	May 2019
ECE Academic Achievement Award	May 2019
Siemens FutureMakers Hackathon - 2nd Place	May 2018
GAANN Fellowship - 5-Year Full PhD Funding Support	September 2017
IEEE Cybersecurity Symposium at Fairleigh Dickinson University - 2nd Place Poster	September 2016
Rutgers ECE Research Day - 2nd Place - Conference Travel Grant Prize	February 2016
Conference Travel Award sponsored by Rutgers Graduate School	November 2015
ECE Capstone Design - Top 10 Project	Fall 2013
New Jersey Beach Buggy Association Scholarship Award Winner	2012
WOBM Student of the Month	2009

FACTS (FUN and OTHERWISE)

Rutgers Men's Alpine Snowboard Racing Team
Summited 11 Colorado 14ers
Improv comedy player
Completed 1 semester of college ballet in Rutgers Mason Gross School of the Arts (with a B+)
Created)'(art pieces "Self Portrait" and "Dancing" using style-transfer computer vision algorithms