

## RESEARCH INTERESTS

Deep learning, geometry, dynamical systems & probabilistic graphical models

## ACADEMIC APPOINTMENTS

### Princeton University

Postdoctoral Researcher, Presidential Postdoctoral Research  
Fellows

Princeton, NJ  
August 2020 - Present

## EDUCATION

### University of Pennsylvania

Ph.D., Computer Information Science, *Fontaine Fellow*, *GEM Fellow*  
*Thesis*: Leveraging Symmetric Structure for Improved Learning in Convolutional Neural Networks  
*Advisor*: Prof. Kostas Daniilidis  
M.S., Robotics

Philadelphia, PA  
Spring 2020

May 2013

### San Jose State University

B.S. Computer Engineering  
B.S. Mechanical Engineering

San Jose, CA  
August 2011  
August 2011

## PUBLICATIONS

C. Esteves, Y. Xu, **C. Allen-Blanchette**, K. Daniilidis, *Equivariant Multi-View Networks*, ICCV, 2019 (**Oral**)  
C. Esteves, **C. Allen-Blanchette**, A. Makadia, K. Daniilidis, *Learning  $SO(3)$  Equivariant Representations with Spherical CNNs*, ECCV, 2018 (**Oral**)  
C. Esteves, **C. Allen-Blanchette**, X. Zhou, K. Daniilidis, *Polar Transformer Networks*, ICLR, 2018  
S. Leonardos, **C. Allen-Blanchette**, J. Gallier, *The exponential map for the group of similarity transformations and applications to motion interpolation*, IEEE ICRA, 2015

## Publications In Preparation

**C. Allen-Blanchette**, S. Veer, A. Majumdar, N. Leonard, *LagNet: Lagrangian Neural Network*  
**C. Allen-Blanchette**, K. Daniilidis, *Joint Estimation of Image Representations and their Lie Invariants*  
P. Posey, **C. Allen-Blanchette**, *Unequal Exposures: An Application of Convolutional Neural Networks to Predict Neighborhood Physical and Social Characteristics*  
K. Schwerzmann, **C. Allen-Blanchette**, J. Gallion, *Prior Understandings: Algorithms and the Justice System*

## AWARDS & FELLOWSHIPS

Presidential Postdoctoral Research Fellows, Princeton University, 2019-Present  
Provost Postdoctoral Fellow, University of Pennsylvania, 2019 (declined offer)  
Fontaine Fellowship, University of Pennsylvania, 2012-2019  
FOCUS Fellows, Georgia Institute of Technology, 2016  
NextProf Future Faculty Workshop, University of Michigan, 2015  
NSF IGERT Complex Scene Perception Fellowship, University of Pennsylvania, 2012-2014  
GEM Fellowship, University of Pennsylvania, 2012  
Summer Undergraduate Research Fellowship, Georgia Institute of Technology, 2010  
Tau Beta Pi Honor Society, San Jose State University, 2008  
David A. Brown Fellowship in Mechatronics, San Jose State University, 2007  
Pi Tau Sigma Honor Society, San Jose State University, 2006

## PATENTS

### **(WO2009086109) Systems and Methods for Dynamic Alignment Beam Calibration**

*A method for performing DA (Dynamic Alignment) beam calibration in a plasma processing system is provided.*

### **(US8751047B2) Systems and Methods for Calibrating End Effector Alignment in a Plasma Processing System**

*A method for calibrating alignment of an end effector with respect to a chuck in a plasma processing system is provided.*

### **(WO2009086164) Systems and Methods for Calibrating End Effector Alignment Using at Least a Light Source**

*A method for calibrating alignment of an end effector with respect to a chuck in a plasma processing system is provided.*

### **(WO2009086042) Arrangements and Methods for Determining Positions and Offsets**

*A method for determining positions and offsets in a plasma processing system, the plasma processing system including at least a chuck and an upper electrode is provided.*

## PRESENTATIONS

“LagNet: Lagrangian Neural Networks”, *Princeton University*, Princeton, NJ April 6, 2020

“Equivariant Filtering in CNNs”, *Princeton University*, Princeton, NJ January 31, 2020

“Design and Use of Equivariant Filters in CNNs”, *University of Pennsylvania, Kod\*lab*, Philadelphia, PA, June 26, 2018

“3D Object Classification”, *NSF-IUCRC ROSE-HUB*, Minneapolis, MN, April 26-27, 2018

“Equivariant networks”, *NSF-IUCRC ROSE-HUB*, Denver, CO, November 16-17, 2017

“Motion Interpolation in SIM(3)”, *GEM Annual Board Meeting and Conference*, San Diego, CA, August 13-15, 2014

## RESEARCH EXPERIENCE

### **University of Pennsylvania**

*Graduate Researcher, GRASP Laboratory*

Philadelphia, PA

*June 2012 - August 2020*

### **Georgia Institute of Technology**

*Undergraduate Researcher, HumAnS Lab*

Atlanta, GA

*May - July 2010*

## PROFESSIONAL EXPERIENCE

### **BAE Systems**

*Software Engineering Intern*

Developed software emulators for vehicle components

Santa Clara, CA

*June 2009 - April 2010*

### **Lam Research**

*Mechatronics Intern*

Developed techniques for improved silicon wafer centering

Fremont, CA

*July 2007 - August 2008*

### **San Jose State University**

*Robotics Course - Curriculum Designer, Mechatronics Lab*

San Jose, CA

*February 2007 - January 2008*

### **San Jose State University**

*Robotics Course - Software Developer, Mechatronics Lab*

San Jose, CA

*June - August 2006*

## TEACHING EXPERIENCE

### **University of Pennsylvania**

Teaching Assistant, *CIS 580: Machine Perception*, Spring 2018

Trainee, *Course in College Teaching*, Spring 2017

Course Developer and Teaching Assistant, *edX Robotics: Vision Intelligence and Machine Learning*, Summer 2017

Lecturer, *Research Experience for Teachers (RET) - Linear Algebra*, Summer 2016

Teaching Assistant, *CIS 371: Computer Organization and Design*, Spring 2014

Teaching Assistant, *COGS001: Introduction to Cognitive Science*, Fall 2013

## OUTREACH

AMP GEM GRAD Lab, *Why Graduate School?* - *Panelist*, April 6, 2018  
Data for Black Lives Conference, *Ask a Data Scientist* - *Panelist*, November 17-19, 2017  
DataRescue Philly, *Seeder/Sorter*, January 14, 2017  
Research Experience for Teachers (RET), *Mentor*, Summer 2016  
iPraxis, *Coding Scienteer*, January 2015 - May 2015  
West Philly Tutoring Project (WPTP), *Math Tutor (4th grade)*, September 2014 - December 2014  
Google Hack212: Urban Innovation, *Hacker*, November 5-7, 2011

## ACTIVITIES

Fontaine Society, *Alum*  
National Consortium for Graduate Degrees for Minorities in Engineering and Science (GEM), *Alum*  
National Society of Black Engineers (NSBE), *Alum*  
Society of Women Engineers (SWE), *Alum*  
University of Pennsylvania Womens Ice Hockey, *Alum*