# Christine Allen-Blanchette

http://cablanc.github.io :: ca15@princeton.edu

## RESEARCH INTERESTS

Deep learning, geometry, dynamical systems & probabilistic graphical models

## ACADEMIC APPOINTMENTS

**Princeton University** — Princeton, NJ
*Postdoctoral Researcher*, Mechanical and Aerospace Engineering — *August 2020 - Present*
*Presidential Postdoctoral Research Fellow*

## EDUCATION

**University of Pennsylvania** — *Philadelphia, PA*
Ph.D., Computer and Information Science — *Spring 2020*
M.S.E., Robotics — *May 2013*
Dissertation: Leveraging Symmetric Structure for Improved Learning in Convolutional Neural Networks
Advisor: Prof. Kostas Daniilidis
*NSF IGERT Complex Scene Perception Fellow*
*Distinguished Fontaine Fellow*
*GEM Fellow*

**San Jose State University** — *San Jose, CA*
B.S. Computer Engineering — *August 2011*
B.S. Mechanical Engineering — *August 2011*
*David A. Brown Mechatronics Fellow*

## PUBLICATIONS

**C. Allen-Blanchette**, S. Veer, A. Majumdar, N. Leonard, *LagNetViP: A Lagrangian Neural Network for Video Prediction*, AAAI 2020 Symposium on Physics Guided AI
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*, ICRA, 2015

### In Preparation

**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

Council on Science and Technology (CST) Award, Princeton University, 2020
Presidential Postdoctoral Research Fellows, Princeton University, 2019-Present
Provost Postdoctoral Fellow, University of Pennsylvania, 2019-2021 (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.*

## INVITED TALKS

Berkeley SemiAutonomous Seminar, October 2020
Workshop on Equivariance and Data Augmentation, September 2020
UF Nonlinear Controls and Robotics Seminar, September 2020
University of Pennsylvania - Kod*lab, August 2020
Princeton University, January 2020
University of Pennsylvania - Kod*lab, June 2018

## PRESENTATIONS

Princeton University, *LagNet: Lagrangian Neural Networks*, April 6, 2020
NSF-IUCRC ROSE-HUB, Minneapolis, MN, *3D Object Classification*, April 26-27, 2018
NSF-IUCRC ROSE-HUB, Denver, CO, *Equivariant networks*, November 16-17, 2017
GEM Annual Board Meeting and Conference, San Diego, CA, *Motion Interpolation in SIM(3)*, August 13-15, 2014

## RESEARCH EXPERIENCE

**University of Pennsylvania** — Philadelphia, PA
*Graduate Researcher*, GRASP Laboratory — *June 2012 - August 2020*

**Georgia Institute of Technology** — Atlanta, GA
*Undergraduate Researcher*, HumAnS Lab — *May - July 2010*

## PROFESSIONAL EXPERIENCE

**BAE Systems** — Santa Clara, CA
*Software Engineering Intern* — *June 2009 - April 2010*
Developed software emulators for vehicle components

**Lam Research** — Fremont, CA
*Mechatronics Intern* — *July 2007 - August 2008*
Developed techniques for improved silicon wafer centering

**San Jose State University** San Jose, CA
*Robotics Course - Curriculum Designer*, Mechatronics Lab *February 2007 - January 2008*

**San Jose State University** San Jose, CA
*Robotics Course - Software Developer*, Mechatronics Lab *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*