

Akshay Raj Dhamija

Computer Vision & Deep Learning Researcher

About Me

I am a computer science PhD student graduating in spring 2022. My research is focused towards deep learning for computer vision and I have a keen interest in application of everyday research to real world scenarios. My prior experience is spread across various problem domains such as face recognition, object recognition and detection, metric learning, identifying and addressing performance bottlenecks in pre-existing code. Apart from research I love designing user facing products and share an enthusiasm for managing painless project deliveries, if such a world exists :).



akshay-raj-dhamija
github.io



github.com/
akshay-raj-dhamija



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Skills

Python	C++
PyTorch	Caffe2
Caffe	Keras
NumPy	Git
Flask	Java

Interests

Computer Vision
Deep Learning
Machine Learning

Experience

Computer Vision Intern (12/19 - 02/20)

Samsung Research America (Neon.life)

Worked on end-to-end deep learning framework to bring digital avatars to life including semantic labeling, human pose estimation, feature representation and rendering, model training, optimization, deployment etc. Actively contributed to the showcasing of the final product at **CES2020**.

Computer Vision Intern (06/18 - 8/18)

Misty Robotics

Developed **object detection** and **face detection** algorithms for **on the device** inferencing using Qualcomm snapdragon neural processing engine on a Qualcomm 820 processor.

Research Assistant (09/15 - Today)

Vision And Security Technology Lab

Research aimed at open-set or out-of-distribution detection for **image classification**, **object detections**, **face recognition** systems and **evaluation** of such systems. Also worked on projects of **object detection in drone videos**, **dataset collection**, **annotation** and challenge organization.

Project Consultant (11/12 - 08/15)

My Personal Health Records eXpress (MphRx)

In a dynamic healthcare startup I was responsible for **requirement gathering**, **product design**, **project planning**, **sprint planning**, **sprint reviews**, **daily scrums** and **product delivery** to release mobile and web based applications. Also got an opportunity to design, develop and deliver **user log analytics** using **SQL** and **NoSQL** databases.

Patent

Systems and methods for machine classification and learning that is robust to unknown inputs

Terrance E. Boulton, **Akshay Raj Dhamija** and Manuel Günther
US Patent App. 16/442,469 - 2020



Publications

Complete list @

Reducing Network Agnostophobia

Akshay Raj Dhamija, Manuel Günther and Terrance E. Boulton
Neural Information Processing Systems (NeurIPS) 2018 - Oral

Acceptance rate 3%



The Overlooked Elephant of Object Detection: Open Set

Akshay R. Dhamija, Manuel Günther, Jonathan Ventura and Terrance E. Boulton
Winter Conference on Applications of Computer Vision (WACV) 2020

Acceptance rate 34.5%



Improving Deep Network Robustness to Unknown Inputs with Objectosphere

Akshay Raj Dhamija, Manuel Günther and Terrance E. Boulton
Uncertainty and Robustness in Deep Visual Learning (CVPR'2019 workshop) - Oral

Acceptance rate 22.5%



Towards a Unifying Framework for Formal Theories of Novelty

TE Boulton, PA Grabowicz, DS Prijatelj, R Stern, L Holder, J Alspector, M Jafarzadeh, T Ahmad, **AR Dhamija**, C Li, S Cruz, A Shrivastava, C Vondrick, WJ Scheirer
AAAI Conference on Artificial Intelligence (AAAI 2021)

Acceptance rate 21%



I-MOVE: Independent Moving Objects for Velocity Estimation

Jonathan Schwan, **Akshay R. Dhamija** and Terrance E. Boulton
Winter Conference on Applications of Computer Vision (WACV) 2020

Acceptance rate 34.5%



Learning and the Unknown: Surveying Steps toward Open World Recognition

Terrance E. Boulton, **Akshay Raj Dhamija**, Steve Cruz, Manuel Günther, James Henrydoss and Walter Scheirer
Proceedings of the AAAI Conference on Artificial Intelligence - 2019

Acceptance rate 16.5%





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vast.uccs.edu/~adhamija/blog/

Watchlist adaptation: protecting the innocent



Manuel Günther, **Akshay Raj Dhamija** and Terrance E. Boulton

International Conference of Biometrics Special Interest Group (BIOSIG) 2020 Acceptance rate 32%

Unconstrained face detection & open-set face recognition challenge



M. Günther, P. Hu, C. Herrmann, C. H. Chan, M. Jiang, S. Yang, **A. R. Dhamija**, D. Ramanan, J. Beyerer, J. Kittler, M. Al Jazaery, M. I. Nouyed, G. Guo, C. Stankiewicz, and T. E. Boulton

Challenge paper at International Joint Conference on Biometrics (IJCB) 2017

vast.uccs.edu/Opensetface/

Awards

Top Scholar Award - Mountain Lion Research Day

University of Colorado

Outstanding Masters Degree Student - Computer Science

University of Colorado

Graduate Research Award

University of Colorado

Student presenter for Foundation Board of Trustee's

University of Colorado

Education

2018 - Now

PhD Student (Expected 2022) - Computer Science

[University of Colorado, Colorado Springs](#)

2015 - 2017

Master of Science - Computer Science

[University of Colorado, Colorado Springs](#)

2010 - 2012

Master of Business Administration - Software Enterprise Management

[Guru Gobind Singh Indraprastha University, New Delhi](#)

2006 - 2010

Bachelor of Technology - Biomedical Engineering

[Rajasthan Technical University, Kota, Rajasthan](#)

Other Projects

VR website using A-Frame

Aimed towards experiencing basics of Virtual Reality and creating a personal virtual reality website using A-Frame. The website may be found at akshay-raj-dhamija.github.io/vr

Android application for GRE aspirants

The project was aimed at learning Android Application development and creating an application for GRE aspirants for practicing Reading Comprehensions. More than **5000** Downloads and **900** active users. [Play Store Link](#)

Robot object fetching

The project was a part of the robotics course at UCCS, where a robot equipped with a camera and a raspberry pie was used to identify a predefined cylindrical object, approach it and grip. Four ultra-sonic sensors were also used in order to localize the robot. ROS was used in the above project.

Patient monitoring system

The project involved developing a patient monitoring system with parameters of temperature and ECG waveform fed into a PC where processing was done in MATLAB. This project couldn't be completed but a few Heart Rate Variability (HRV) parameters (Heart rate, RR Interval, NN50 and SDNN) were successfully extracted from a pre-stored ECG signal.