

Fall 2019 Carnegie Mellon University

Intro to Computer Vision

16-385

Robotics Institute

today

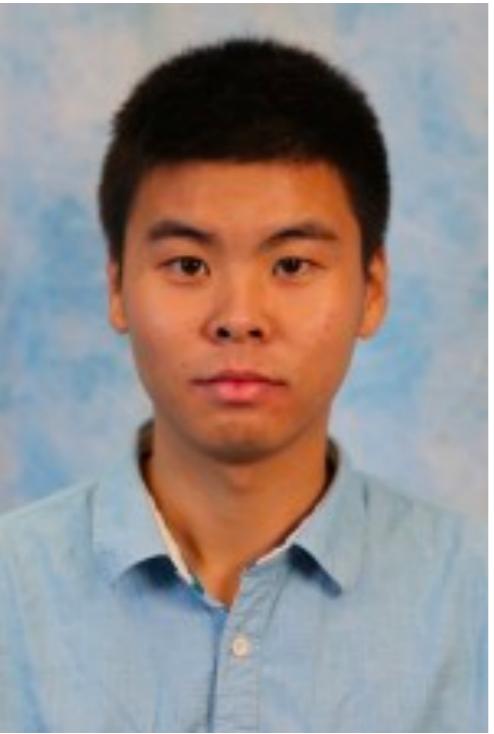
- staff introduction
- what is computer vision?
- modern applications of computer vision
- administrative stuff (\leftarrow important)

Self Introduction

Diego Martinez

- Senior – Electrical and Computer Engineering, Minor in Robotics
- Intending on doing a Masters in Computer Vision or Robotics
- Research Interests:
 - Full body capture and reconstruction
 - Standalone device 6DoF tracking for AR/VR (see: Oculus Quest)
 - Object detection and tracking
 - Vision-based control systems
 - Deep learning (of course)
- Worked at Google X this summer on VR and Computer Vision applied to robotics





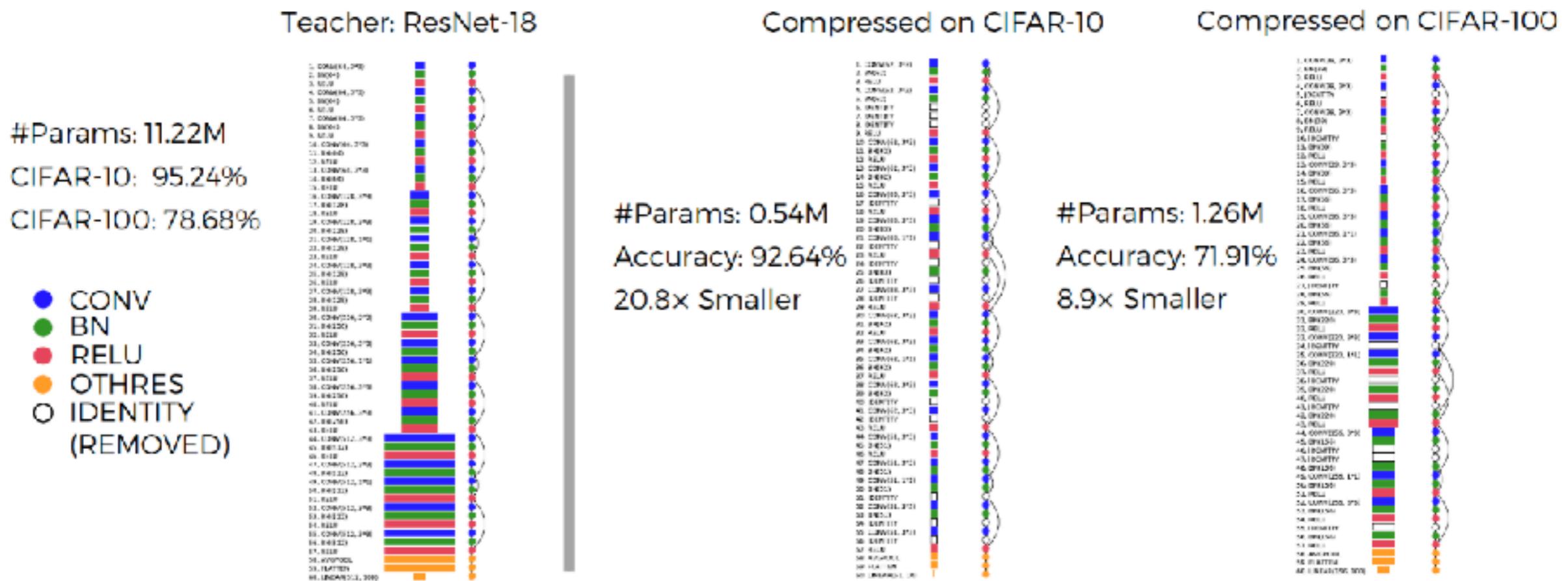
Xiaofang Wang
PhD Student
Robotics Institute
Smith Hall 208
xiaofan2@cs.cmu.edu
Advisor: Kris Kitani

Research Interests

- Neural Architecture Search
- Network Compression
- Video Understanding

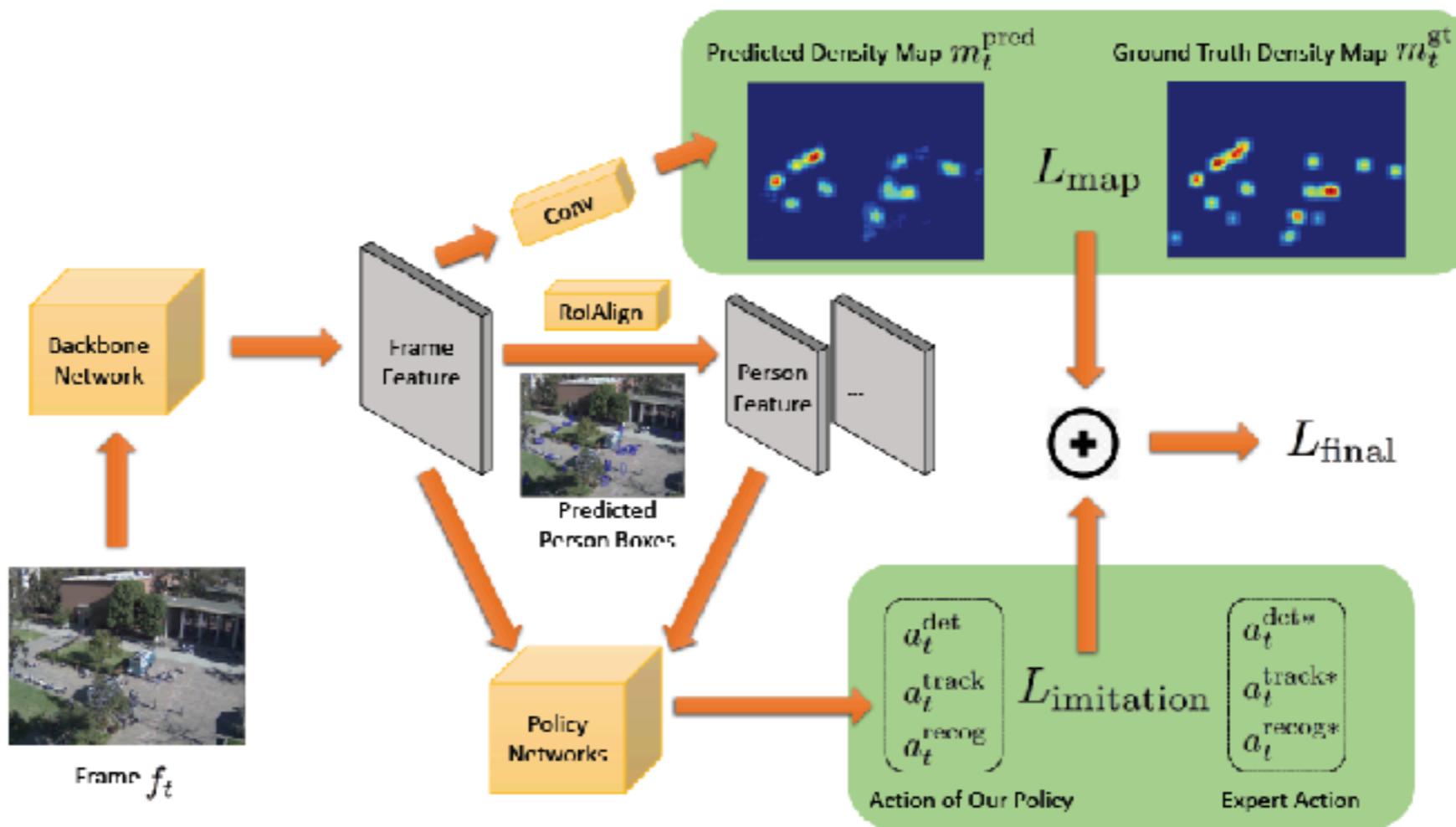
Compressed Architecture Search with Bayesian Optimization

Automating the compression of a large neural network



Efficient Human Action Localization in Videos via Imitation Learning

Learn to properly allocate computational resources
for efficient human action localization



Xinshuo Weng

(xinshuw@cs.cmu.edu)



- Bio:
 - MSc. in Computer Vision, Robotics Institute, CMU
 - Ph.D., Robotics Institute, CMU
- Webpage: www.xinshuweng.com
- Office Hours: 5:00 – 6:00 pm, Mondays, Smith Hall 200
- Office: Smith Hall 210
- Research Interests: 3D Computer Vision, Autonomous Driving, Video Analysis

3D Computer Vision for Autonomous Driving

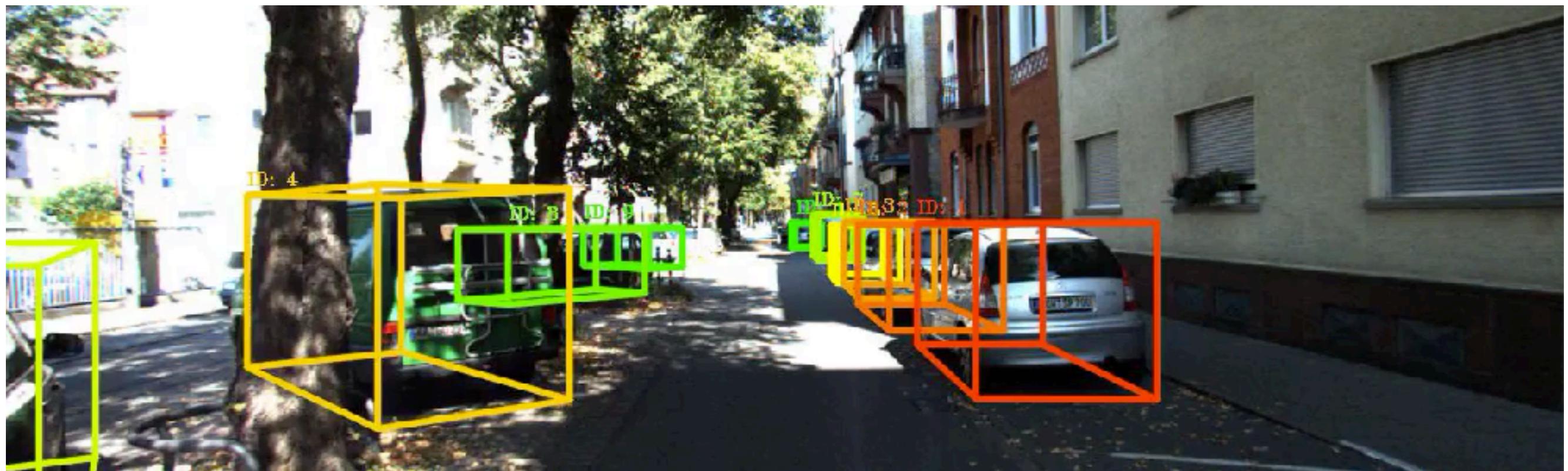
- 3D Object Detection



X. Weng, K. Kitani. *Monocular 3D Object Detection with Pseudo-LiDAR Point Cloud*. ICCVW, 2019.

3D Computer Vision for Autonomous Driving

- 3D Multi-Object Tracking



X. Weng, K. Kitani. *A Baseline for 3D Multi-Object Tracking*. arXiv:1907.03961, 2019.



Ye Yuan

PhD student, Robotics Institute

yyuan2@cs.cmu.edu

Research Interests:

- Human Pose Estimation
- Reinforcement Learning
- Generative Models

Egocentric Pose Estimation and Forecasting

Input



Estimate

Forecast

Egocentric video



Output



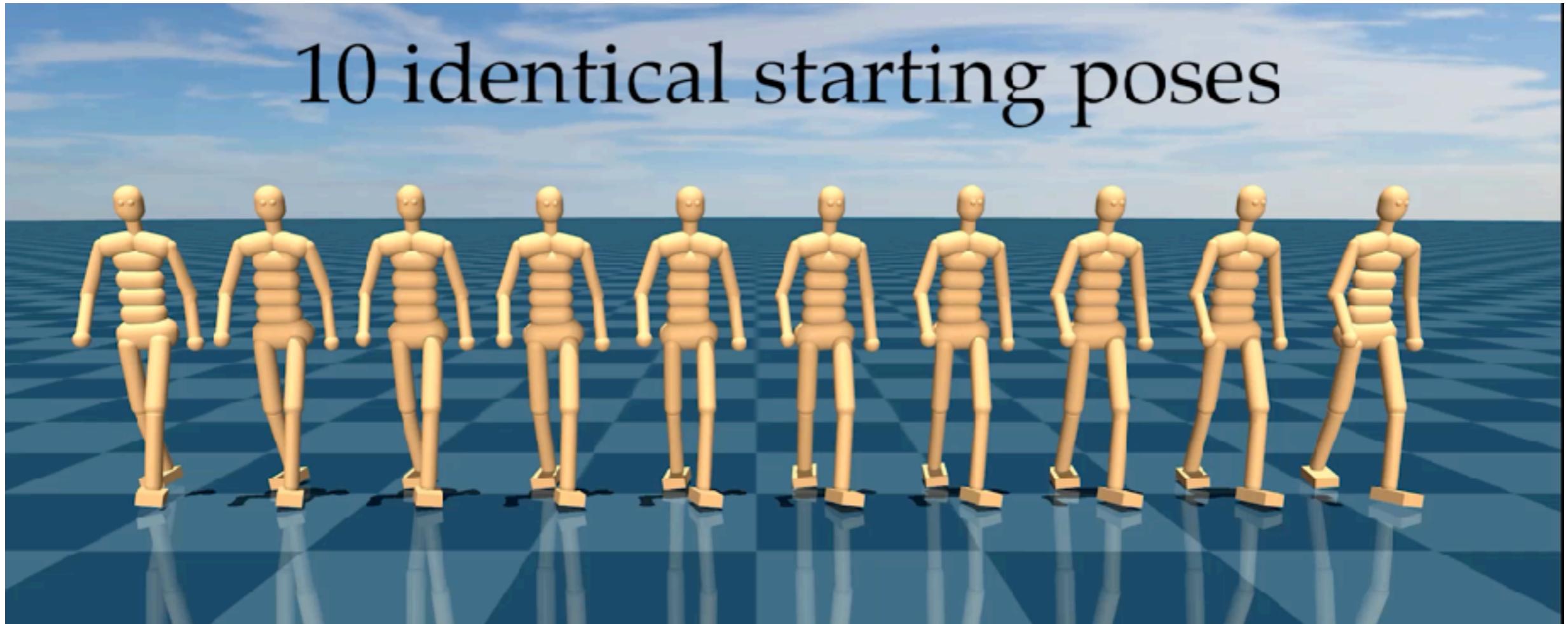
Output



Third-person Ground Truth

Diverse Motion Forecasting

10 identical starting poses



Kris Kitani



University of Southern California (1995-1999)

KLA-Tencor Japan (2000-2003)

University of Tokyo (2003-2008)

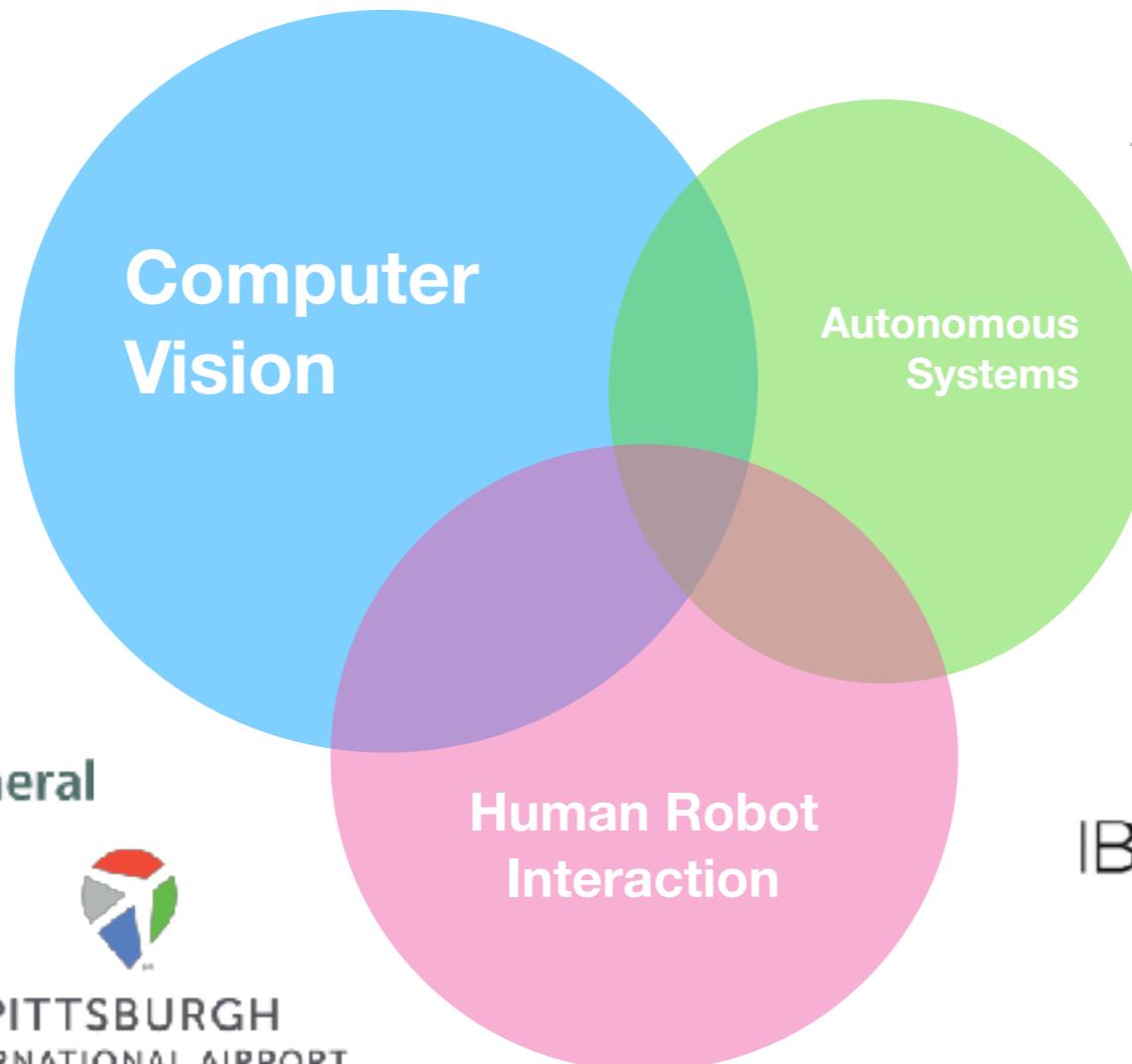
University of Electro-Communications (2008-2011)

University of California, San Diego (2010)

Carnegie Mellon University (2011-present)



razzy fresh
Frozen Yogurt



facebook
Reality Labs

DENSO
Crafting the Core

amazon
Lab126

IBM Research

40 research papers (2018)

- 8 HCI (CHI, PETRA, IMWUT, ASSETS, PerCom, W4A, IUI)
- 5 Machine Learning (NeurIPS, ICLR, AAAI, CMLA)
- 10 Computer Vision (ECCV, BMVC, WACV, PAMI, IJCV)
- 6 Robotics (CoRL, RSS)
- 11 ArXiV

Activity Forecasting

