



EDUCATION INDUSTRY COLLABORATION

July 9, 2024





NILDA BLANCO

Senior Vice President
of Strategic Initiatives
CareerSource Central Florida





TADAR MUHAMMAD

Chief Operating Officer
CareerSource Central Florida





UNIVERSITY OF
CENTRAL FLORIDA



MIKE HARDING

Associate Vice President,
Partnerships
Advancement & Partnerships
University of Central Florida

OVERVIEW

Mission: Align educational programming with industry needs at the local level

Who: CareerSource Central Florida, University of Central Florida, education organizations, and industry leaders

Focus: Unite education with industry needs to respond to the community's economic growth and the demands of the future workforce





Legislative Initiative

What: Signed into law on May 15, 2023, Senate Bill 240, requires each local workforce development board to create an education and industry consortium.

Who: Composed of representatives of educational entities and businesses in Central Florida



UNIVERSITY OF
CENTRAL FLORIDA

Collaborative Mission

Central Florida Education-Industry Collaborative

Goal: To align educational programming with industry needs at the local level

How: Identify and create strategies to address workforce needs. Collaborative findings will inform strategic plans for Central Florida's educational organizations, businesses and job seekers. Members appointed by CSCF board chair.



Committee Reports

Consortium (post-secondary): Met on May 16, 2024.

Working Groups: Met on May 15, 2024 (K-12) and on June 26, 2024 (Research & Development)



K-12 / APPRENTICESHIP WORKGROUP UPDATE

The workgroup met and discussed the following:

- Current and future labor market data
- Overview of apprenticeship programs
 - Program structure
 - Industry involvement
- Discussion on education system partnerships:
 - Ways industry could partner – donate equipment and supplies, provide teachers, start-up funding not covered
- Discussion on industry needs and engagement with education:
 - Soft skills/foundational skills are essential for all workers; industry could use help in engaging with education

POST-SECONDARY EXPERIENCES CONSORTIUM

The Consortium met and discussed:

- Current economic factors impacting the workforce
 - Affordable childcare
 - Inflation
 - Return to work policies
 - Balance of work and life
- Dynamic reshaping and changing the workplace
 - Impact of AI
 - Multiple generations in the workplace
 - Value of post-secondary education





UNIVERSITY OF
CENTRAL FLORIDA

Research & Development Update

MIKE HARDING



Associate Vice President,
Partnerships
Advancement & Partnerships
University of Central Florida



Jobs for the Future

The AI-Ready Workforce

How Leaders and Workers Can Prepare for
a Reshaped Future of Work



ALEX SWARTSEL

Managing Director – JFF Labs

Jobs for the Future's The Center for Artificial Intelligence & the Future of Work

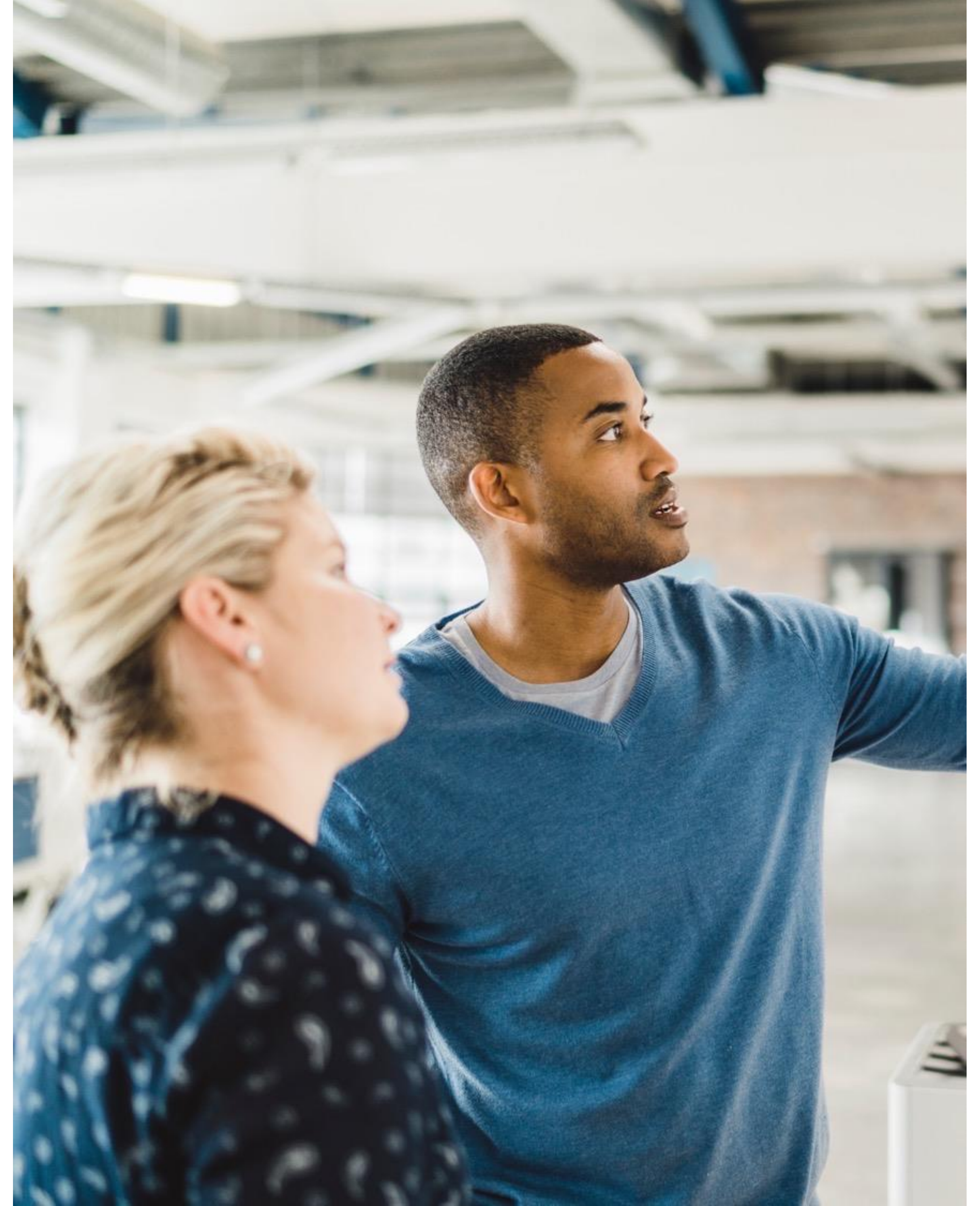
CareerSource Central Florida
Education & Industry Consortium | July 9, 2024

Alex Swartsel, Managing Director, Insights, JFFLabs

jff.org/ai

JFF'S MISSION

Jobs for the Future drives transformation of the U.S. education and workforce systems to achieve equitable economic advancement for all.



JFF's North Star

In 10 years,
75 million people facing
systemic barriers to
advancement work in
quality jobs.



The age of AI is here. It's complicated – and its impact will be enormous.

A.I. Poses 'Risk of Extinction,' Industry Leaders Warn

Leaders from OpenAI, Google DeepMind, Anthropic and other A.I. labs warn that future systems could be as deadly as pandemics and nuclear weapons.

FEATURED STORY

Why AI Will Save the World

Marc Andreessen

How Could A.I. Destroy Humanity?

Researchers and industry leaders have warned that A.I. could pose an existential risk to humanity. But they've been light on the details.

Artificial intelligence could be our saviour, according to the CEO of Google

Jan 24, 2018

**100
million**

Active users of ChatGPT in just 2 months

Compare to just under 5 years for Facebook

**\$151
billion**

In enterprise spending on generative AI solutions by 2027

Representing an 86% annual growth rate

7%

Potential annual GDP increase over 10 years

Due to estimated boost in labor productivity

What if we asked:

**How might we use *AI* to *accelerate*
equitable economic mobility?**

A new initiative with humans at its heart

JFF's Center for Artificial Intelligence & the Future of Work

Our Mission: To ensure the future powered by AI accelerates, rather than delays, equitable access to quality jobs, by shaping policy, practice, and investment in innovative solutions that drive equitable economic advancement.

Our Focus Questions

- Understanding how AI will **change the nature of quality jobs and pathways to economic agency**, and reimagining training pathways, supports, and upskilling strategies
- Mapping and supporting rapid validation and adoption of the most promising **AI-powered use cases** and platforms for the future of quality jobs
- Catalyzing sustainable **policy, practice, and investment** in solutions that drive economic opportunity

Our Key Outcomes

- Measurably greater awareness of AI potential and challenges
- Increased progress and momentum towards AI readiness across the workforce
- Increased buy-in for AI applications centering equity for North Star populations
- Demonstration of emergent practices and solutions showing promise for leveraging AI to connect more people with quality jobs

What we're seeing so far

Aligned to our “curiosity agenda” questions

Reshaping Jobs & Skills

Still **early**:

- AI skills not yet prominent in job postings
- Technical skill half life shortening

...but early signals are starting to create **divides and choices**:

- Adoption by enterprise, SMB, solopreneurs; “BYOAI”
- AI credentials, but not yet role-specific applied AI training

Use Cases for Education & Workforce

- “Point of entry” often incremental **productivity** – or concerns about integrity and risk
- **Transformational** potential, but difficult to imagine
- Critical importance of – and barriers / blockers around – **data**

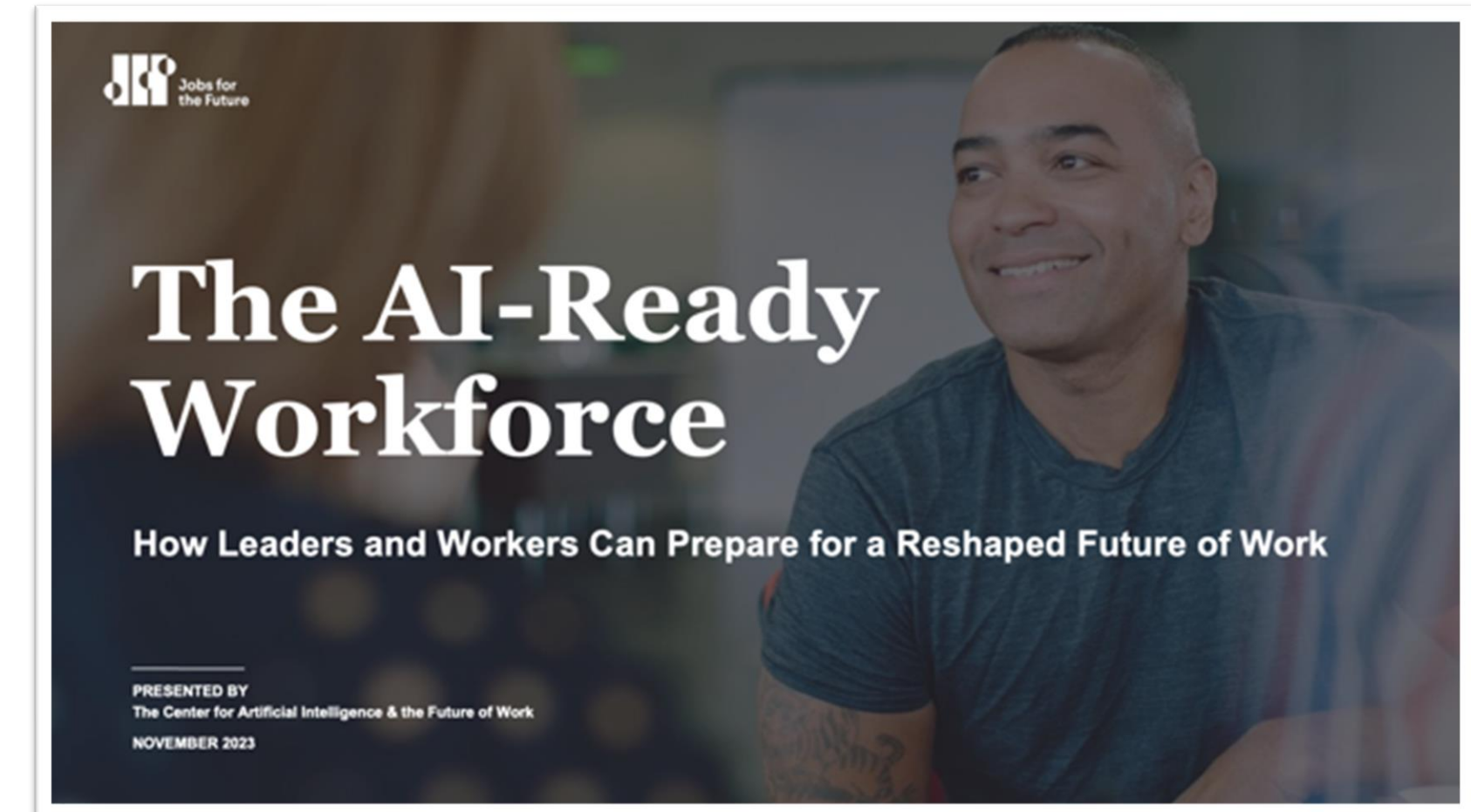
Policy, Capital, and Social Implications

- Primary focus on **security** and risk mitigation; work/education focus grounded in **literacy**
- **Inclusive design** and responsible technology
- Opportunity to help flesh out **what AI may mean for jobs and economic equity**, and implications

Our early findings

How AI could reshape in-demand jobs

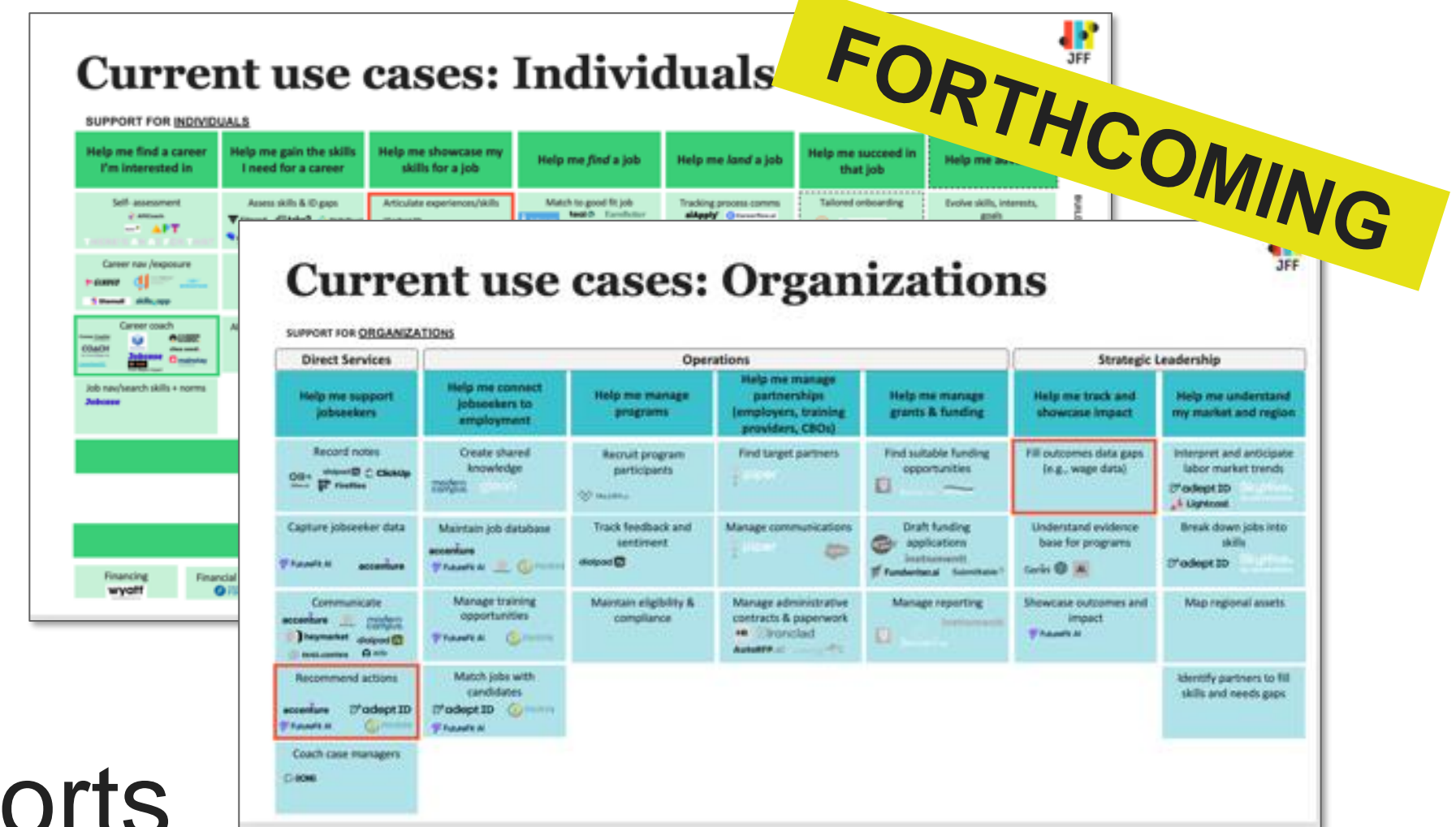
- How workers leverage AI within certain tasks and skills is just as important as how much.
- Because jobs will more likely shift over time, rather than overnight, planning deliberately for transformation is key.
- Most importantly: every occupation we studied will benefit from doubling down on the uniquely human skills that will be elevated or augmented by AI.



Our early findings

Use cases for AI in workforce

- **Individual** use cases include career navigation, skill development, finding and landing a job, connecting to social capital and wraparound supports



- **Organizational** use cases include support for direct services to jobseekers, operations (partnership and program management), understanding local market, tracking impact

- **Opportunities**: facilitate human connections; using data to clarify pathways and surface skills; remove friction from career navigation

Looking back – and looking ahead

Progress from the Center for AI's first year and our roadmap

Reshaping Jobs & Skills

COMPLETED

- ***AI-Ready Workforce Framework***: preparing for AI's impact on in-demand jobs

IN PROGRESS:

- Current state of AI job transformation in gateway jobs and employer / education recommendations
- Additional supports / toolkits

Use Cases for Education & Workforce

COMPLETED

- ***AI Use Cases in Workforce***: initial landscape map

TO COME:

- Deeper opportunities analysis and solution / innovator incubation

Policy, Capital, and Social Implications

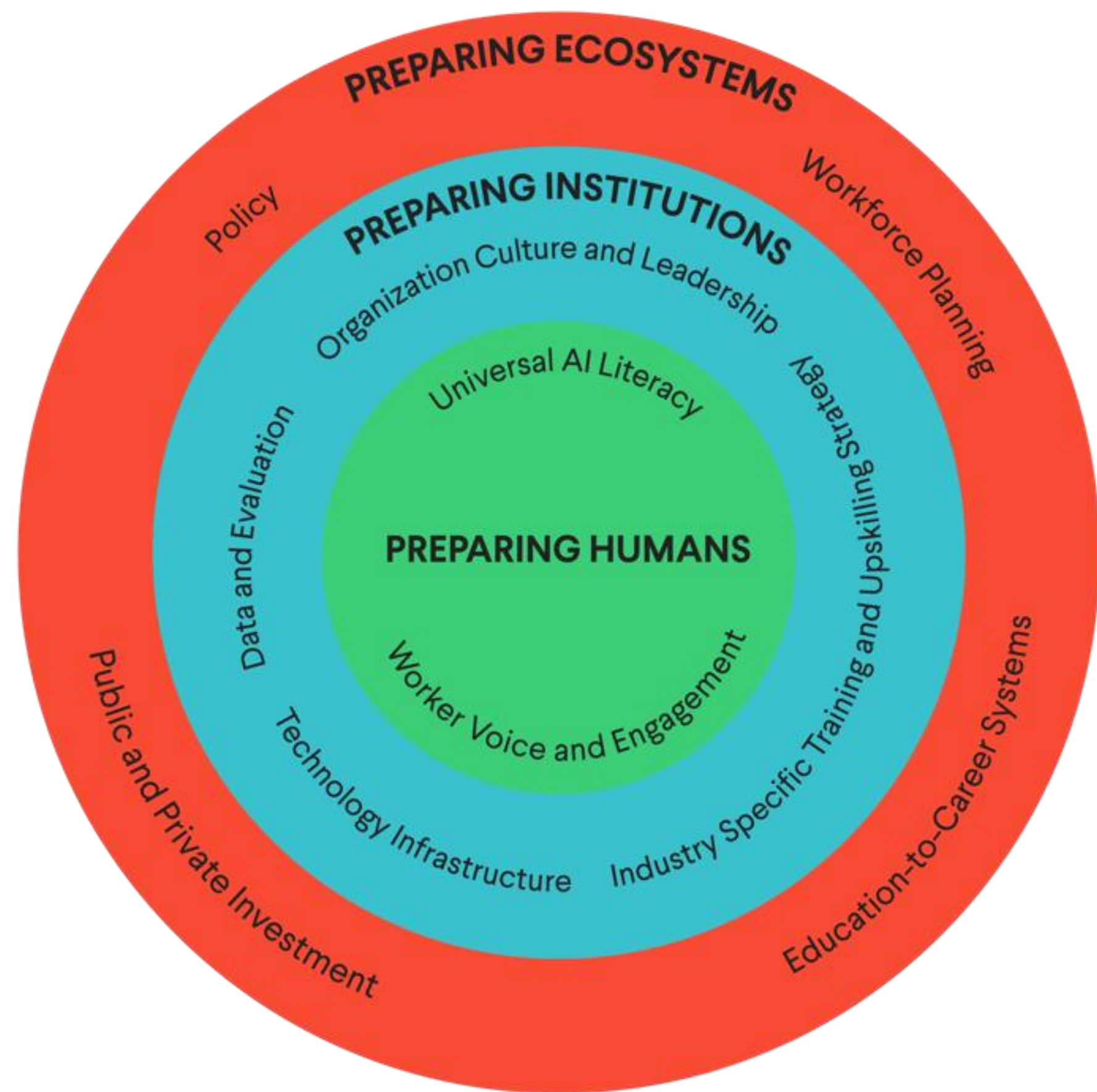
IN PROGRESS:

- ***AI for Economic Equity Framework***: steps to ensure AI connects people to quality jobs & economic agency
- ***Worker & learner stories*** and insights

TO COME:

- Equity framework progress
- Public policy agenda

AI readiness starts with putting humans at the center.



- **Employers can**
 - Create supportive cultures and employee feedback loops
 - Ensure access to foundational AI literacy training
 - Evaluate AI's impact
 - Build partnerships
- **Postsecondary leaders can**
 - Create new disciplines
 - Adapt and update curricula
- **Policymakers can**
 - Support research and enhanced labor market data
 - Expand access to training programs and new education financing approaches
 - Center economic equity in regulatory/legislative efforts

How are we reimagining the future of work?



JFF



UNIVERSITY OF
CENTRAL FLORIDA

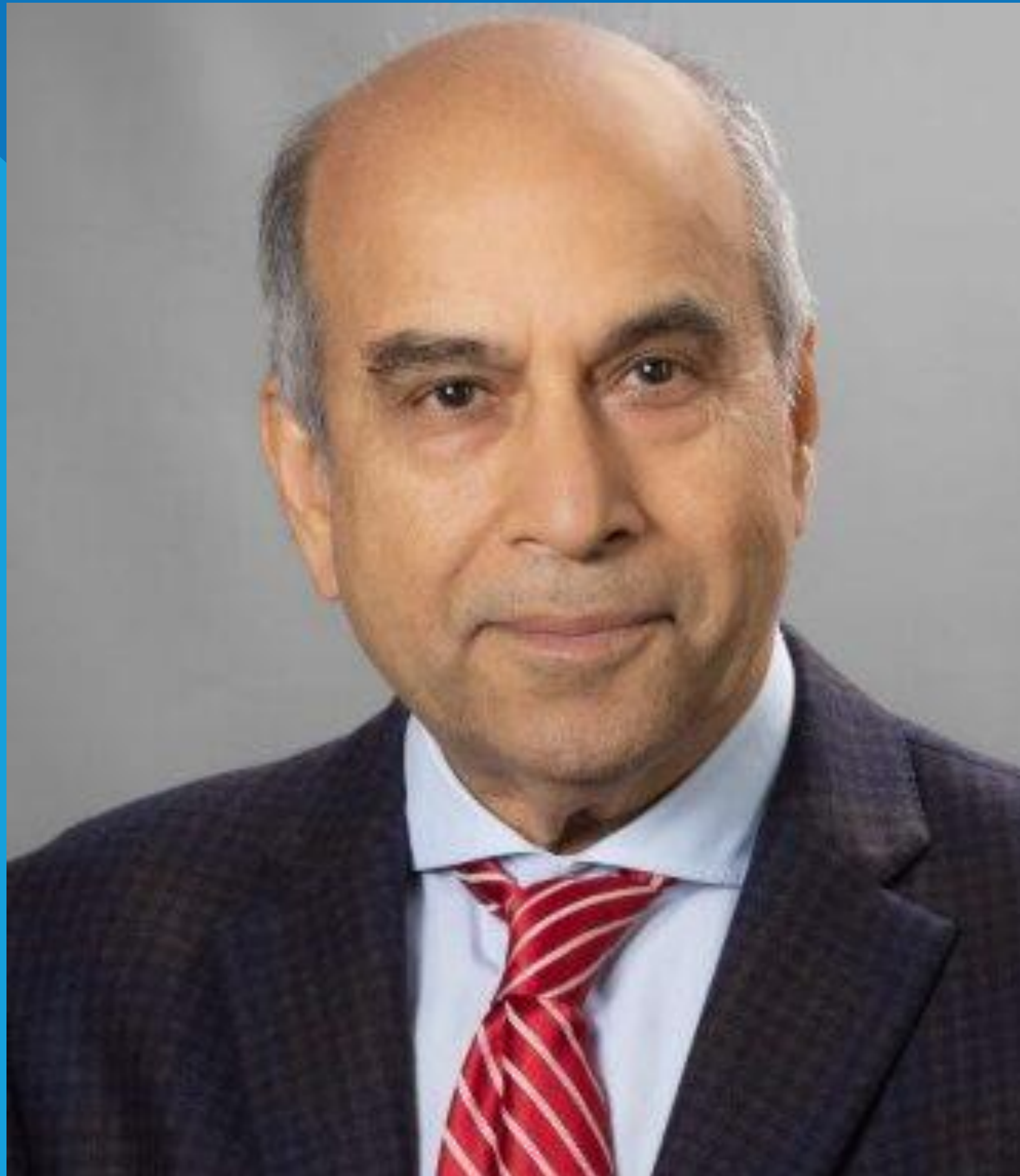
The Future is Here – AI Initiative at UCF



UNIVERSITY OF
CENTRAL FLORIDA

DR. MUBARAK SHAH

UCF Trustee Chair; Professor,
Computer Science; UCF Center for
Research in Computer Vision





Perspectives: Impacts of AI

Panel Discussion

PANELIST



Alex Swartzel
JFF



Dr. Mubarak Shah
UCF



Simone Babb
Orange County



Loren Horsager
Model Mind AI

SHARE YOUR THOUGHTS WITH US



Next Steps

Next Central Florida Education &
Industry Consortium meetings: October

Virtual working groups scheduled
September - October



BONUS WORKSHOP



**Jobs for
the Future**

Alex Swartzel, a Managing Director at JFF Labs who's leading the launch of JFF's new Center for Artificial Intelligence & the Future of Work, will lead a hands-on workshop grounded in JFF's [AI-Ready Workforce Framework](#). This session will help leaders think differently about how to respond to the impacts of AI in their own work and across their organization—and better prepared to tackle big questions about how to navigate this new landscape of work by leading with equity and humanity.

Special Thank you





EDUCATION INDUSTRY COLLABORATION

Thank You





UCF CENTER FOR RESEARCH IN COMPUTER VISION

Overview of Center for Research in Computer Vision (CRCV)

&

Artificial Intelligence Initiative (Aii)

Mubarak Shah

Center for Research in computer Vision

University of Central Florida

shah@crcv.ucf.edu

<https://www.crcv.ucf.edu/>





UCF CENTER FOR RESEARCH IN COMPUTER VISION

Overview of Center for Research in Computer Vision (CRCV)

Mubarak Shah

Center for Research in computer Vision

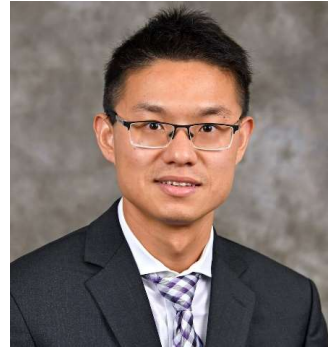
University of Central Florida

shah@crcv.ucf.edu

<https://www.crcv.ucf.edu/>



Center for Research in Computer Vision (CRCV)




- 3 Core faculty
- 35 Ph.D. Students
- 2 Postdocs
- 15 associated Faculty
- Several Visitors



UCF Computer Vision is ranked Top 8 in US!

UF: 71, USF: 90, FIU: 100, FSU: 115

CSRankings: Computer Science Rankings

CSRankings is a metrics-based ranking of top computer science institutions around the world. **Click on a triangle** (▶) to expand areas or institutions. **Click on a name** to go to a faculty member's home page. **Click on a chart icon** (the  after a name or institution) to see the distribution of their publication areas as a **bar chart**. **Click on a Google Scholar icon** () to see publications, and **click on the DBLP logo** () to go to a DBLP entry. *Applying to grad school? Read this first.* For info on grad stipends, check out CSStipendRankings.org. **Do you find CSRankings useful? Sponsor CSRankings on GitHub.**

Rank institutions in by publications from to

All Areas [\[off\]](#) [\[on\]](#)





























AI [\[off\]](#) [\[on\]](#)

- ▶ Artificial intelligence
- ▶ Computer vision
- ▶ Machine learning
- ▶ Natural language processing
- ▶ The Web & information retrieval

Systems [\[off\]](#) [\[on\]](#)

- ▶ Computer architecture
- ▶ Computer networks
- ▶ Computer security
- ▶ Databases
- ▶ Design automation
- ▶ Embedded & real-time systems
- ▶ High-performance computing
- ▶ Mobile computing
- ▶ Measurement & perf. analysis
- ▶ Operating systems
- ▶ Programming languages
- ▶ Software engineering

Theory [\[off\]](#) [\[on\]](#)

#	Institution	Count	Faculty
1	▶ Carnegie Mellon University  	100.7	31
2	▶ Univ. of California - Berkeley  	80.6	25
3	▶ Univ. of California - San Diego  	78.2	27
4	▶ Stanford University  	71.0	23
5	▶ Univ. of Illinois at Urbana-Champaign  	56.1	21
6	▶ Johns Hopkins University  	54.2	11
7	▶ University of Maryland - College Park  	51.2	19
8	▶ University of Central Florida  	50.6	13
9	▶ Massachusetts Institute of Technology  	49.7	28
10	▶ Stony Brook University  	43.3	19
11	▶ Georgia Institute of Technology  	38.9	21
12	▶ University of Wisconsin - Madison  	38.7	9
13	▶ Cornell University  	38.3	16
14	▶ Univ. of California - Merced  	36.5	4
15	▶ University of Pennsylvania  	36.1	23
15	▶ University of Texas at Austin  	36.1	14
17	▶ Michigan State University  	35.1	9

CVPR is ranked top 4 publication venue among all sciences!

Categories ▾

English ▾

	Publication	h5-index	h5-median
1.	Nature	467	707
2.	The New England Journal of Medicine	439	876
3.	Science	424	665
4.	IEEE/CVF Conference on Computer Vision and Pattern Recognition	422	681
5.	The Lancet	368	688
6.	Nature Communications	349	456
7.	Advanced Materials	326	415
8.	Cell	316	503
9.	Neural Information Processing Systems	309	503
10.	International Conference on Learning Representations	303	563
11.	JAMA	286	476
12.	Science of The Total Environment	273	375
13.	Nature Medicine	268	459

CRCV has Nine papers at CVPR-2022!

1. Ristea, Nicolae-Catalin; Madan, Neelu; Ionescu, Radu Tudor; Nasrollahi, Kamal; Khan, Fahad Shahbaz; Moeslund, Thomas B.; Shah, Mubarak, *Self-Supervised Predictive Convolutional Attentive Block for Anomaly Detection*
2. Karim, Nazmul; Rizve, Mamshad Nayeem; Rahnavard, Nazanin; Mian, Ajmal; Shah, Mubarak *UNICON: Combating Label Noise Through Uniform Selection and Contrastive Learning*
3. Acsintoae, Andra; Florescu, Andrei; Georgescu, Mariana-Iuliana; Mare, Tudor; Sumedrea, Paul; Ionescu, Radu Tudor; Khan, Fahad Shahbaz; Shah, Mubarak, *UBnormal: New Benchmark for Supervised Open-Set Video Anomaly Detection*
4. Dave, Ishan Rajendrakumar; Chen, Chen; Shah, Mubarak, *SPAct: Self-supervised Privacy Preservation for Action Recognition*
5. Kumar, Akash; Rawat, Yogesh Singh, *End-to-End Semi-Supervised Learning for Video Action Detection*
6. Mendieta, Matias; Yang, Taojiannan; Wang, Pu; Lee, Minwoo; Ding, Zhengming; Chen, Chen, *Local Learning Matters: Rethinking Data Heterogeneity in Federated Learning (Best Paper Finalist)*
7. Zhu, Sijie; Shah, Mubarak; Chen, Chen, *TransGeo: Transformer Is All You Need for Cross-view Image Geo-localization*
8. Cao, Jiale; Pang, Yenwai; Anwer, Rao Muhammad; Cholakkal, Hisham; Xie, Jin; Shah, Mubarak; Khan, Fahad Shahbaz, *PSTR: End-to-End One-Step Person Search With Transformers*
9. Gupta, Akshita; Narayan, Sanath; Joseph, K J; Khan, Salman; Khan, Fahad Shahbaz; Shah, Mubarak, *OW-DETR: Open-world Detection Transformer*



CRCV has Fourteen papers at CVPR-2023!

1. Zhu, Sijie; Yang, Linjie; Chen, Chen; Shah, Mubarak; Shen, Xiaohui; Wang, Heng, **R2Former: Unified retrieval and ranking Transformer for Place Recognition**
2. Gupta, Rohit; Roy, Anirban; Kim, Sujeong; Christensen, Claire; Grindal, Todd; Gerard, Sarah Nixon; Cincebeaux, Madeline; Divakaran, Ajay; Shah, Mubarak, **Class Prototypes based Contrastive Learning for Classifying Multi-Label and Fine-Grained Educational Videos**
3. Dave, Ishan Rajendrakumar; Rizve, Mamshad Nayeem; Chen, Chen; Shah, Mubarak, **TimeBalance: Temporally-Invariant and Temporally-Distinctive Video Representations for Semi-Supervised Action Recognition**
4. Rizve, Mamshad Nayeem; Mittal, Gaurav; Yu, Ye; Hall, Matthew; Sajeev, Sandra; Shah, Mubarak; Chen, Mei, **PivoTAL: Prior-Driven Supervision for Weakly-Supervised Temporal Action Localization**
5. Urooj, Aisha; Kuehne, Hilde; Wu, Bo; Chheu, Kim; Bouselham, Walid; Gan, Chuang; Lobo, Niels; Shah, Mubarak, **Learning Situation Hyper-Graphs for Video Question Answering**
6. Bhunia, Ankan Kumar; Khan, Salman; Cholakkal, Hisham; Anwer, Rao Muhammad; Laaksonen, Jorma Tapio; Shah, Mubarak; Khan, Fahad **Person Image Synthesis via Denoising Diffusion Model**
7. Wasim, Syed Talal; Naseer, Muzammal; Khan, Salman; Khan, Fahad; Shah, Mubarak, **Vita-CLIP: Video and text adaptive CLIP via Multimodal Prompting**



CRCV has Fourteen papers at CVPR-2023!

8. Clark, Brandon Eric; Kerrigan, Alec; Kulkarni, Parth Parag; Cepeda, Vicente Vivanco; Shah, Mubarak, **Where We Are and What We're Looking At: Query Based Worldwide Image Geo-localization Using Hierarchies and Scenes**
9. Rana, Aayush; Rawat, Yogesh, **Hybrid Active Learning via Deep Clustering for Video Action Detection**
10. Chantry, Madeline; Biyani, Naman; Kamtam, Prudvi; Vyas, Shruti; Palangi, Hamid; Vineet, Vibhav; Rawat, Yogesh, **A Large-scale Robustness Analysis of Video Action Recognition Models**
11. Zhu, Sijie; Lin, Zhe; Cohen, Scott; Kuen, Jason; Zhang, Zhifei; Chen, Chen, **TopNet: Transformer-based Object Placement Network for Image Compositing**
12. Zheng, Ce; Mendieta, Matias; Yang, Taojiannan; Qi, Guo-Jun; Chen, Chen, **FeatER: An Efficient Network for Human Reconstruction via Feature Map-Based Transformer**
13. Zheng, Ce; Liu, Xianpeng; Qi, Guo-Jun; Chen, Chen, **POTTER: Pooling Attention Transformer for Efficient Human Mesh Recovery**
14. Zhao, Qitao; Zheng, Ce; Liu, Mengyuan; Wang, Pichao; Chen, Chen, **PoseFormerV2: Exploring Frequency Domain for Efficient and Robust 3D Human Pose Estimation**



UCF has Nineteen papers at CVPR-2024!

- Peng, Qucheng; Zheng, Ce; Chen, Chen, **A Dual-Augmentor Framework for Domain Generalization in 3D Human Pose Estimation**
- Liu, Xianpeng; Zheng, Ce; Qian, Ming; Xue, Nan; Chen, Chen; Zhang, Zhebin; Li, Chen; Wu, Tianfu, **Multi-View Attentive Contextualization for Multi-View 3D Object Detection**
- Yuan, Tongtong; Zhang, Xuange; Liu, Kun; Liu, Bo; Chen, Chen; Jin, Jian; Jiao, Zhenzhen, **Towards Surveillance Video-and-Language Understanding: New Dataset, Baselines, and Challenges**
- Pinyoanuntapong, Ekkasit; Wang, Pu; Lee, Minwoo; Chen, Chen **MMM: Generative Masked Motion Model**
- Wang, Xinshun; Fang, Zhongbin; Xia Li, Xiangtai Li; Chen, Chen; Liu, Mengyuan, **Skeleton-in-Context: Unified Skeleton Sequence Modeling with In-Context Learning**
- Chen, Tongjia; Yu, Hongshan; Yang, Zhengeng; Li, Zechuan; Sun, Wei; Chen, Chen, **OST: Refining Text Knowledge with Optimal Spatio-Temporal Descriptor for General Video Recognition**
- Pham, Khoi; Huynh, Chuong Minh; Lim, Ser-Nam; Shrivastava, Abhinav, **Composing Object Relations and Attributes for Image-Text Matching Conference**



UCF has Nineteen papers at CVPR-2024!

- Rizve, Mamshad Nayeem; Fei, Fan; Unnikrishnan, Jayakrishnan; Tran, Son; Yao, Benjamin Z.; Zeng, Belinda; Shah, Mubarak; Chilimbi, Trishul, **VidLA: Video-Language Alignment at Scale**
- Ristea, Nicolae Catalin; Croitoru, Florinel Alin; Ionescu, Radu Tudor; Popescu, Marius; Khan, Fahad; Shah, Mubarak, **Self-Distilled Masked Auto-Encoders are Efficient Video Anomaly Detectors**
- Thawakar, Omkar Chakradhar; Naseer, Muzammal; Anwer, Rao Muhammad; Khan, Salman; Felsberg, Michael; Shah, Mubarak; Khan, Fahad, **Composed Video Retrieval via Enriched Context and Discriminative Embeddings**
- Dutta, Aritra; Das, Srijan; Nielsen, Jacob; Chakraborty, Rajat Subhra; Shah, Mubarak, **Multiview Aerial Visual REcognition (MAVREC) Dataset: Can Multi-view Improve Aerial Visual Perception?**
- Shehreen Azad,; Rawat, Yogesh Singh, **Activity-Biometrics: Person Identification from Daily Activities**
- Cui, Xuanming; Aparcedo, Alejandro; Jang, Young Kyun; Lim, Ser-Nam, **On the Robustness of Large Multimodal Models Against Image Adversarial Attacks Conference**



UCF has Nineteen papers at CVPR-2024!

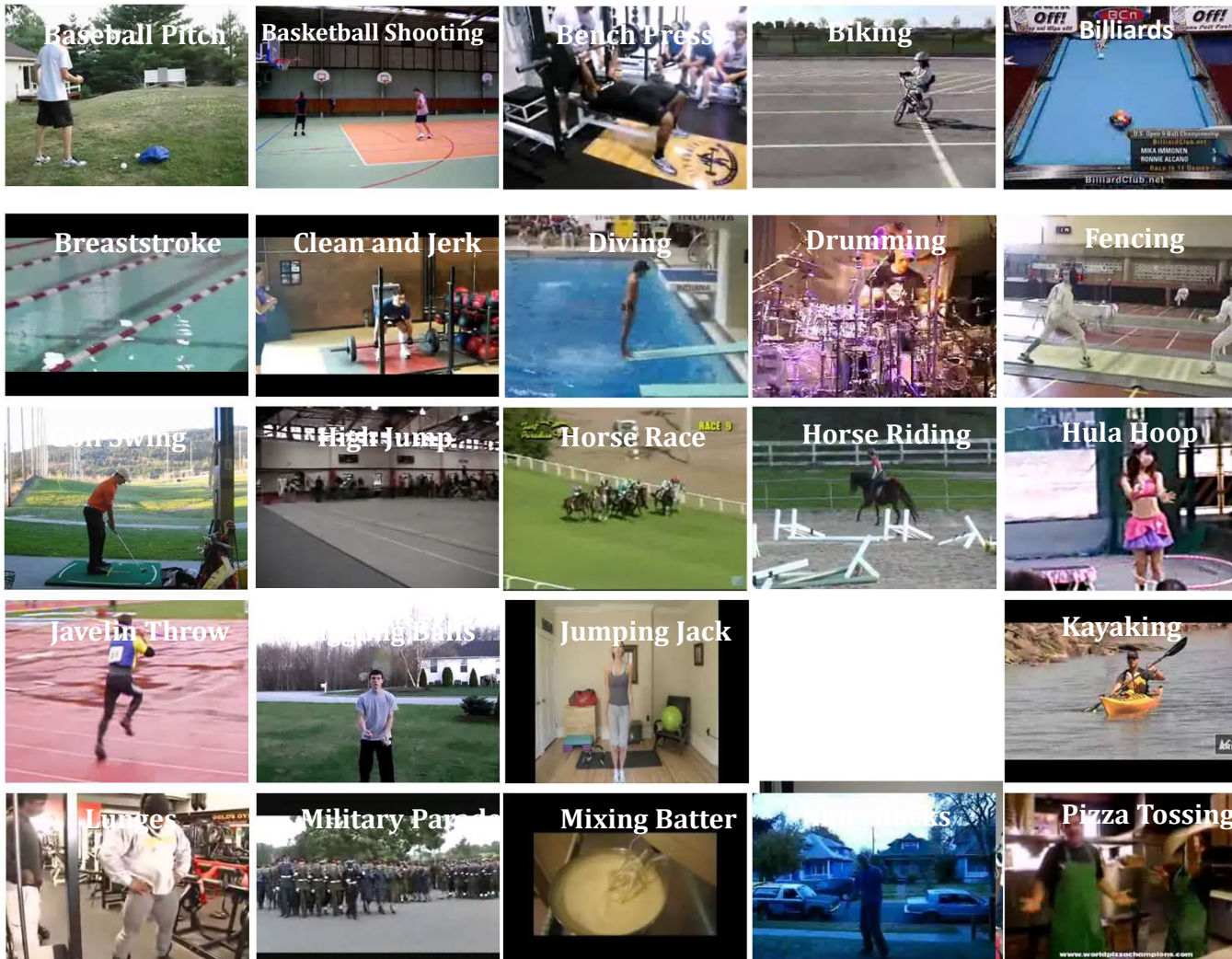
- Pramanick, Shraman; Han, Guangxing; Hou, Rui; Nag, Sayan; Lim, Ser-Nam; Ballas, Nicolas; Wang, Qifan; Chellappa, Rama; Almahairi, Amjad, **Jack of All Tasks, Master of Many: Designing General-Purpose Coarse-to-Fine Vision-Language Model Conference**
- He, Bo; Li, Hengduo; Jang, Young Kyun; Jia, Menglin; Cao, Xuefei; Shah, Ashish; Shrivastava, Abhinav; Lim, Ser-Nam, **MA-LMM: Memory-Augmented Multimodal Model for Long-Term Video Understand Conference**
- Han, Guangxing; Lim, Ser-Nam, **Few-Shot Object Detection with Foundation Models**
- Jang, Young Kyun; Kim, Donghyun; Meng, Zihang; Huynh, Dat; Lim, Ser-Nam, **Visual Delta Generator for Semi-Supervised Composed Image Retrieval**
- Yue, Kaiyu; Chen, Bor-Chun; Geiping, Jonas; Li, Hengduo; Goldstein, Tom; Lim, Ser-Nam, **Object Recognition as Next Token Prediction**
- Zhuoling Li, Xiaogang Xu, Ser-Nam Lim, Hengshuang Zhao, **UniMODE: Universal Monocular 3D Object Detection**



UCF-101 (UCF YouTube Action Dataset)



UCF-101 (UCF YouTube Action Dataset)



Video analysis concerns performing tasks across videos rather than single images.

2.5 Video Computer Vision and Video Generation

Generation

Video generation involves the use of AI to generate videos from text or images.

UCF101

UCF101 is an action recognition dataset of realistic action videos that contain 101 action categories (Figure 2.5.1). More recently, UCF101 has been used to benchmark video generators. This year's top model, W.A.L.T.-XL, posted an FVD16 score of 36, more than halving the state-of-the-art score posted the previous year (Figure 2.5.2).

Sample frames from UCF101

Source: Soomra et al., 2021



Figure 2.5.1

UCF101: FVD16

Source: Papers With Code, 2023 | Chart: 2024 AI Index report

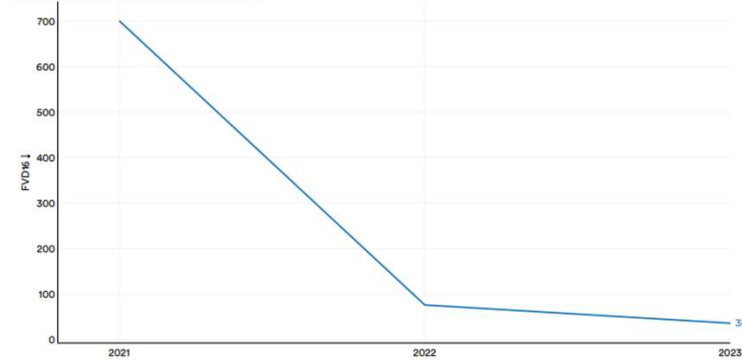


Figure 2.5.2



PAIVI Mark Everingham Prize 2022

The UCF101 and HM51 dataset teams

Khurram Soomro, Amir Roshan Zamir and Mubarak Shah
Hilde Kuehne, Hueihan Jhuang, Estibaliz Garrote, Tomaso A.
Poggio, Thomas Serre

For pioneering human action recognition datasets.





UCF CRCV

@UCFCRCV · 24.1K subscribers · 496 videos

UCF Center for Research in Computer Vision Channel >

crcv.ucf.edu and 3 more links

Subscribe

Home Videos Playlists Community

CVPR 2023 ▶ Play all

<p>Hybrid Active Learning via Deep Clustering for Video Action Detection THU-AM-228</p> <p>Ayazh J. Kiani, Yipeng S. Ren, et al. Center for Research in Computer Vision (CRCV) University of Central Florida (UCF)</p> <p>7:54</p>	<p>PivoTAL: Prior-Driven Supervision for Weakly-Supervised Temporal Action Localization</p> <p>Mamshad Nayeem Rizve, et al.</p> <p>7:50</p>	<p>Where We Are and What We're Looking At: Query Based Worldwide Image Geo-localization Using Hierarchies and Scenes</p> <p>Brandon Clark, Alec Kerrigan, Parth Kulkarni, Vicente Vivanco Cepeda, Dr. Mubarak Shah Paper Tag: THU-PM-246</p> <p>7:33</p>	<p>TimeBalance: Temporally-Invariant and Temporally-Distinctive Video Representations for Semi-Supervised Action Recognition</p> <p>Ishan</p> <p>7:53</p>	<p>Fine-Grained Education Code Labels</p> <p>5:53</p>	<p>Challenges</p> <p>8:00</p>
--	---	--	---	---	-------------------------------

CVPR 2023 - Hybrid Active Learning via Deep Clusterin...

PivoTAL [CVPR 2023]
Mamshad Nayeem Rizve

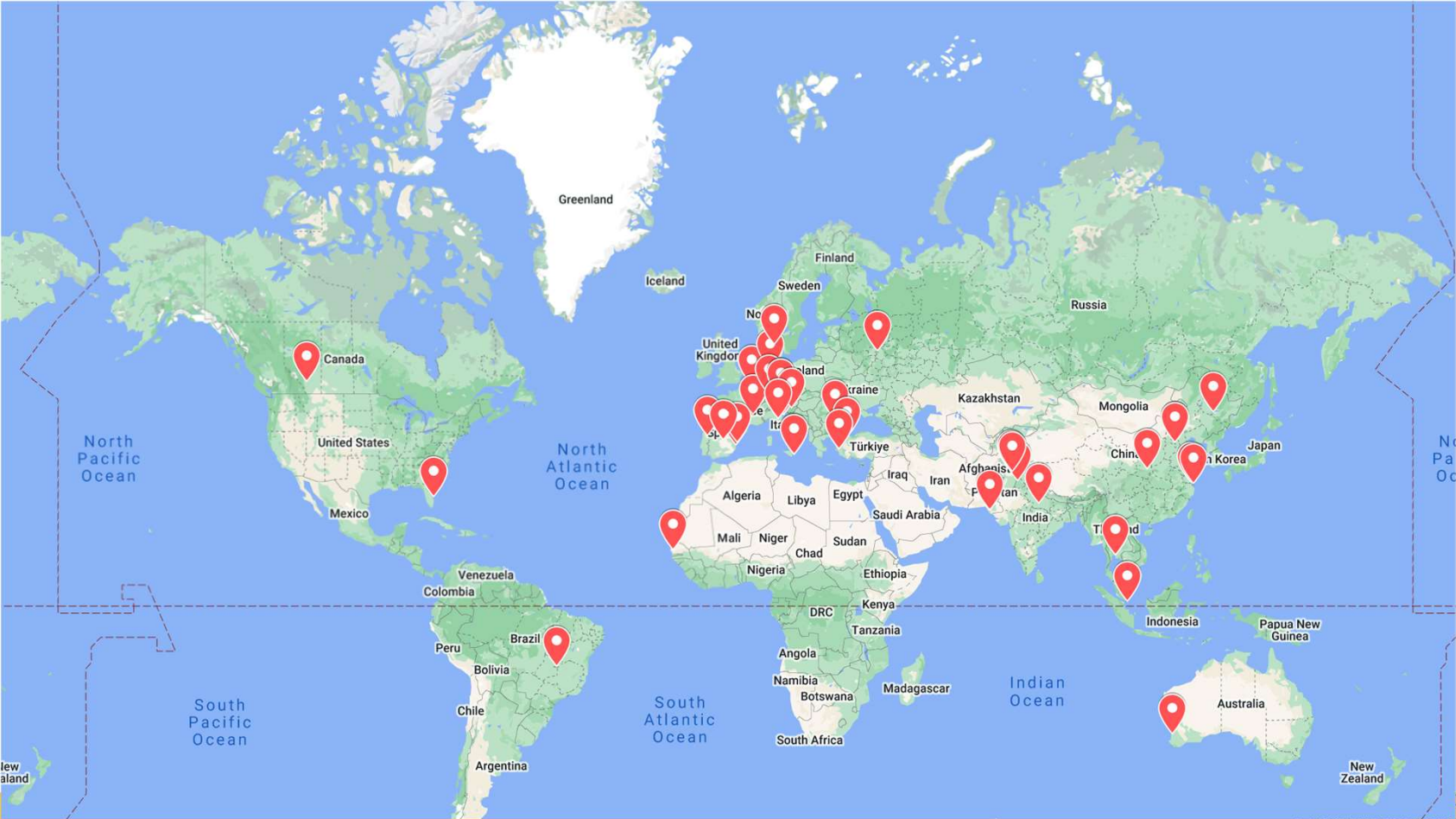
Where We Are and What We're Looking At

TimeBalance [CVPR 2023]
Ishan

Class Prototypes Contrastive Learning for Classifying...

Vita CLIP CVPR Video
talal wasim

International Collaboration: Visitors



Research Funding





BRIAR

BIOMETRIC RECOGNITION AND IDENTIFICATION AT ALTITUDE AND RANGE

INTELLIGENCE VALUE

The BRIAR program aims to provide the U.S. Intelligence Community with the ability to perform accurate and reliable biometric identity intelligence across a wider range of imagery and collected from a wider selection of sensor platforms.



CONTACT INFORMATION

PROGRAM MANAGER

Dr. Lars Ericson

✉ lars.ericson@iarpa.gov

☎ 301-243-1817

BROAD AGENCY ANNOUNCEMENT (BAA)





HAYSTAC

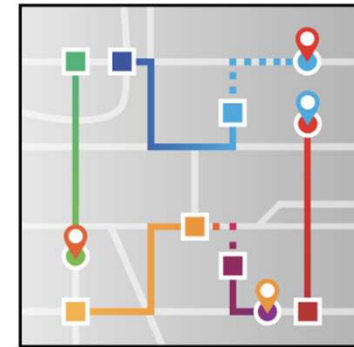
HIDDEN ACTIVITY SIGNAL AND TRAJECTORY ANOMALY CHARACTERIZATION

INTELLIGENCE VALUE

HAYSTAC aims to establish models of “normal” human movement across times, locations, and people in order to characterize what makes an activity detectable as anomalous within the expanding corpus of global human trajectory data. Success will establish the scientific foundation connecting data, movement, and the expectation of privacy.

SUMMARY

The Internet of Things and Smart City infrastructures has led to an explosion of data and insight into how people move. This offers the opportunity to build new models that understand human dynamics at



HAYSTAC

CONTACT INFORMATION

PROGRAM MANAGER

Dr. Cory Krause

✉ cory.krause@iarpa.gov

☎ 202-212-2027





WRIVA

WALK-THROUGH RENDERING FROM IMAGES OF VARYING ALTITUDE

INTELLIGENCE VALUE

The WRIVA program aims to develop software systems to perform site modeling in scenarios where a limited volume of ground-level imagery with reliable metadata is available.

SUMMARY

Site models are highly desired to allow personnel to train and rehearse prior to executing a mission, but typically require a large volume of carefully collected data. Many agencies in the U.S. Intelligence Community,



CONTACT INFORMATION

PROGRAM MANAGER

Ashwini Deshpande

✉ ashwini.deshpande@iarpa.gov

☎ 301-243-2081



Other Federal Agencies



Industry Partnership



UCF-led Research Team to Play Key Role in National \$26M NSF-funded Effort to Develop Smart Streetscapes

A team of UCF researchers will lead one of the five areas that are part of a research center focused on developing livable, safe and inclusive communities.

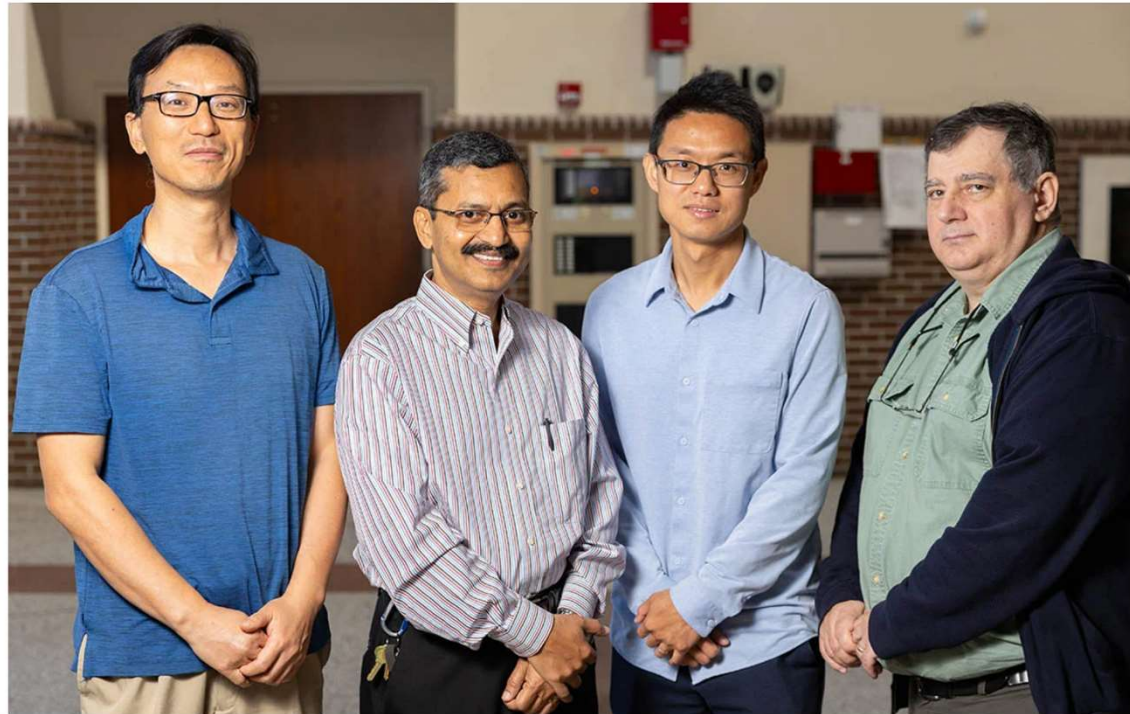
By Kimberly J. Lewis | August 19, 2022



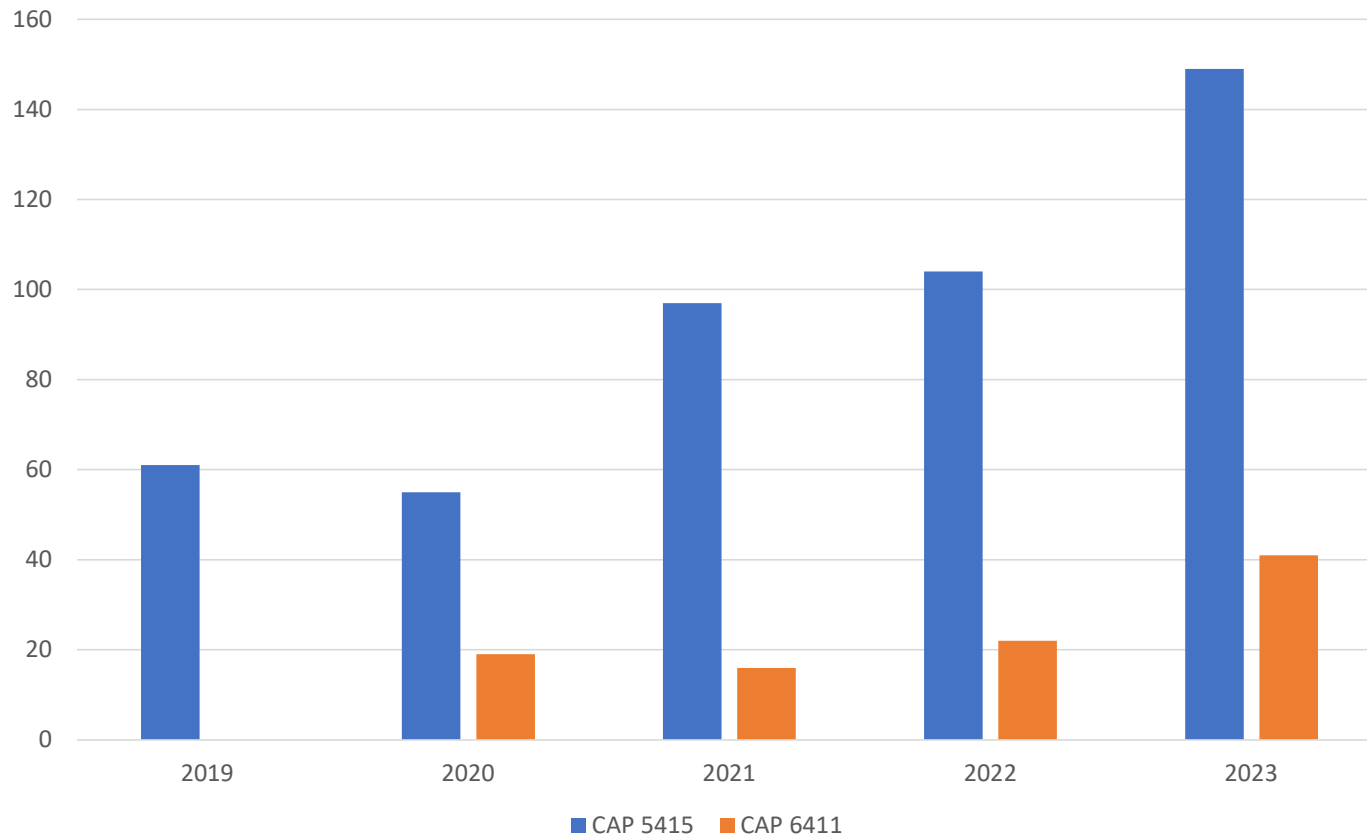
UCF Researchers Lead Project to Develop AI-driven Technologies for Agriculture

The study will examine technologies to improve the industry's field operations, allowing for more accurate and informed agricultural decisions.

By Marisa Ramiccio | March 14, 2024



Computer Vision Courses Enrollment on the rise



Workforce Development: Ph.D. Graduates





Matías Andrés Mendieta

2016-2019	B.S., University of North Carolina at Charlotte
2019-2020	M.S., University of North Carolina at Charlotte
2020-2021	Ph.D. student, University of North Carolina at Charlotte
2022	Applied Scientist Intern, Amazon
2023	Machine Learning Intern, Apple
2021-2024	Ph.D., University of Central Florida
2024	Apple



Center for Research in Computer Vision

UNIVERSITY OF CENTRAL FLORIDA

“

My time at CRCV helped me grow as a person not only by challenging me and pushing me beyond my limits but also by making me resilient, teaching me how to navigate and learn from failures repeatedly. I will forever cherish the memories of countless late-night discussions that ranged from academic topics to life's intricacies, leading to lasting friendships. To everyone who has been a part of this incredible journey, thank you.

”

Mamshad Nayeem Rizve

Ph.D. Graduate, Summer 2023

Postdoctoral Scientist, Amazon





UCF

Center for Research in Computer Vision

UNIVERSITY OF CENTRAL FLORIDA

“

Being part of CRCV has been nothing short of life changing, not only academically but also personally. During these years, I have had the privilege of working alongside some of the most brilliant minds, mentors who have guided me with unwavering patience and peers who have become friends for life. As I bid farewell to this remarkable chapter, I carry with me the lessons learned, the skills acquired, and the cherished memories made. With heartfelt gratitude, I thank every individual who has been a part of my life here.

I am happy to share that I have joined Qualcomm in San Diego.

”

Aayush Rana

Ph.D. Graduate, Summer 2023



“

I transferred to CRCV with my advisor in the middle of my PhD study, and it has been a transformative journey since then. I feel fortunate to work with a group of faculty members with profound expertise, dedication, and unwavering support. The guidance and mentorship I received have pushed me to explore new boundaries, to question established norms, and to think critically. What makes CRCV even more remarkable is the company of my fellow students. As I prepare to graduate, I feel excited to embark on the next chapter of my journey, confident in the foundation that CRCV has provided me."

Thank you for your congratulations. I will be joining AWS AI Labs.

”

Taojiannan Yan

Ph.D. Graduate, Summer 2023



UCF

**Center for Research
in Computer Vision**

UNIVERSITY OF CENTRAL FLORIDA





Kevin Duarte · 1st

Machine Learning Engineer at Adobe

Adobe · University of Central Florida



Ramin Mehran  (He/Him) · 1st

Tech Lead @ Google AI, Multi-Modal
perception/generation, AI Breakdown Podcaster

Google · University of Central Florida

Bellevue, Washington, United States · [Contact info](#)

2,040 followers · [500+ connections](#)



Afshin Dehghan, PhD · 1st

Sr AI/ML Manager @ Hiring Experts in
Multimodal Foundation Models

San Francisco Bay Area · [Contact info](#)

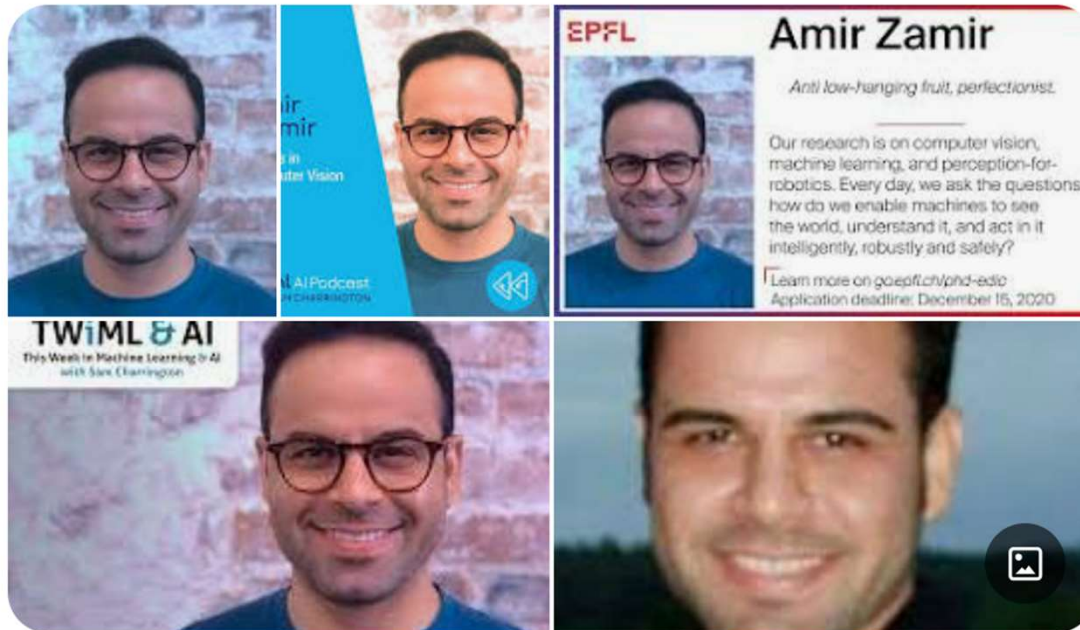
Apple

Amir Zamir

Researcher

Overview

Videos



EPFL

<https://vilab.epfl.ch> > zamir

Amir Zamir @ Swiss Federal Institute of Technology EPFL

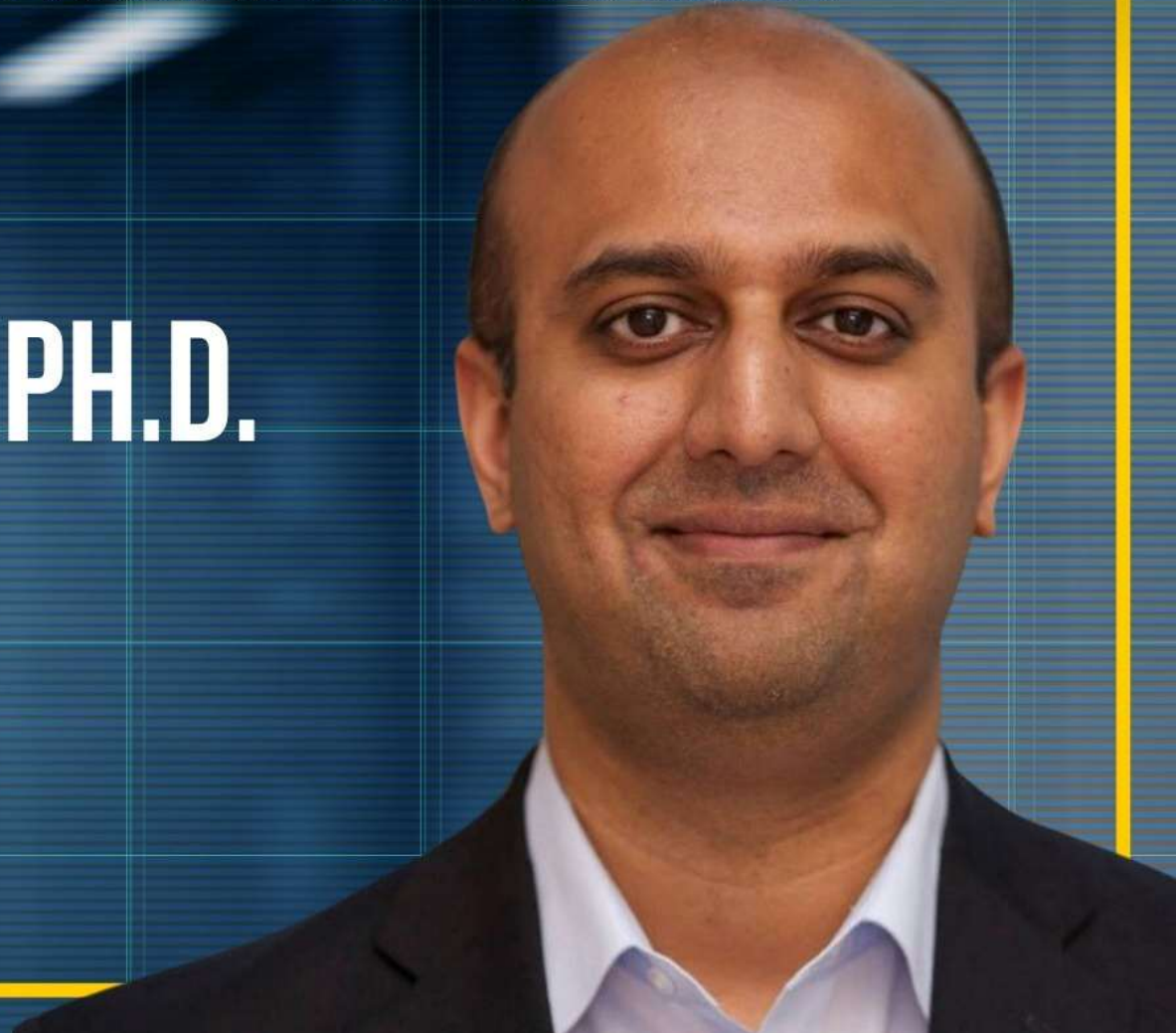
My research interests are broadly in computer vision, machine learning, and AI. The goal of my research has been going beyond narrow and passive vision methods ...



CENTER FOR RESEARCH IN COMPUTER VISION

YASER SHEIKH, PH.D.

VICE PRESIDENT OF
RESEARCH, META



Workforce Development: M.S. Graduates

First Public University in US to
offer MSCV Degree

Masters of Science in Computer Vision (MSCV)



UCF

College of Engineering
and Computer Science

UNIVERSITY OF CENTRAL FLORIDA

Workforce Development: M.S. Graduates



Ryan Glaspey
Software Engineer
Meta

Master of Science in Computer Vision
Class of 2023



Workforce Development: Undergraduates



NSF Research Experience for Undergraduates (REU)



- 10 undergraduates participate in 10 weeks summer program
- 360 undergraduates from 80 different schools and 33 states in US have participated
- **\$460K** for 2024-2027
- 39 years of NSF REU in Computer Vision



2024 REU in Computer Vision Participants



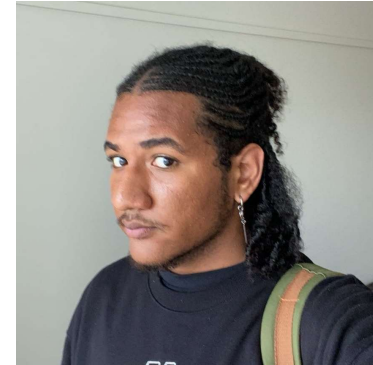
Elvis Cabrera
Miami Dade College



Genesis Escobar
University of Central Florida



Joseph Ho
University of Wisconsin -
Madison



Jevon Joseph
Randolph College



James Moseley
University of Central Florida



Brett Reynolds
Northeastern State
University



Adeel Siddiqi
University of Central Florida



Jasmine Sun
Washington University
in St. Louis



Keerthi Veeramachaneni
Georgia Institute of
Technology



Claire Zhang
Brown University

Thirty Years Celebration of NSF REU at UCF: 2017





Mubarak Shah

2024 Undergraduate Research
Faculty Mentoring Award

Workforce Development: Transfer Students



STRONG-AI

Scholarships, Academic, and Social Supports to Provide Low-Income Transfer Students Opportunities for Nurtured Growth in AI

Funded by the National Science Foundation
Award No. 2321986

2.5 Million

The Center for Research in Computer Vision (CRCV) is pleased to offer scholarships for students in AI fields, through a project funded by the National Science Foundation. These scholarships are renewable for up to an additional four years, and they are intended for students that might not have the opportunity to attend university otherwise.

BS+MS for Transfer Students from Community Colleges



Recruiting

- 153 completed applications
- 127 names were sent to financial aid for confirmation of low-income status and financial need
- 95 students were confirmed to be low-income and high-need.
- Of those 95, only 34 responded with an essay
- These 34 are all being invited for interviews.
- About 13-15 students will be offered scholarships.



Sample CRCV Research Projects

Privacy Preserving Activity Recognition and Anomaly Detection

Dr. Mubarak Shah

Center for Research in Computer Vision (CRCV)
University of Central Florida

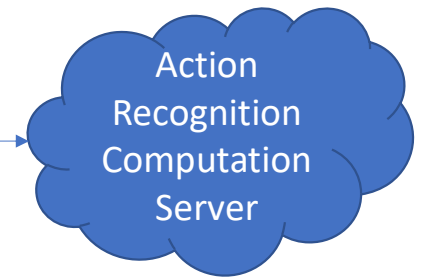
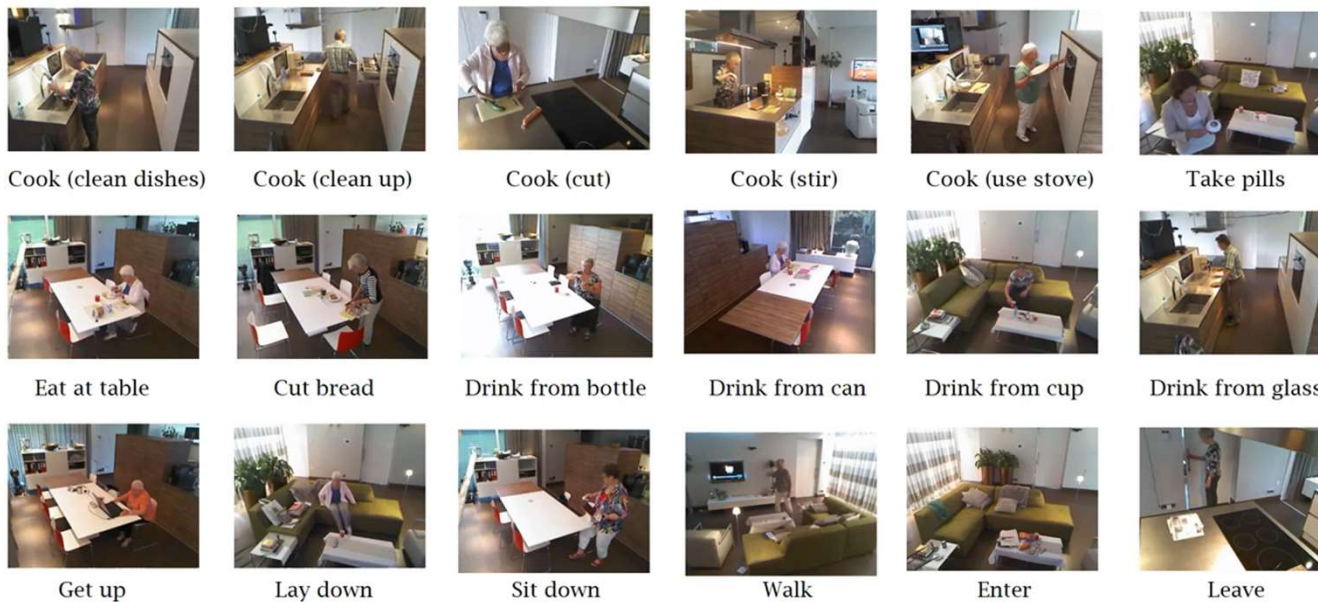


Joseph Fiorese



Ishan Dave

Privacy leakage in Action Recognition



Gender, skin color,
clothing, background
objects etc

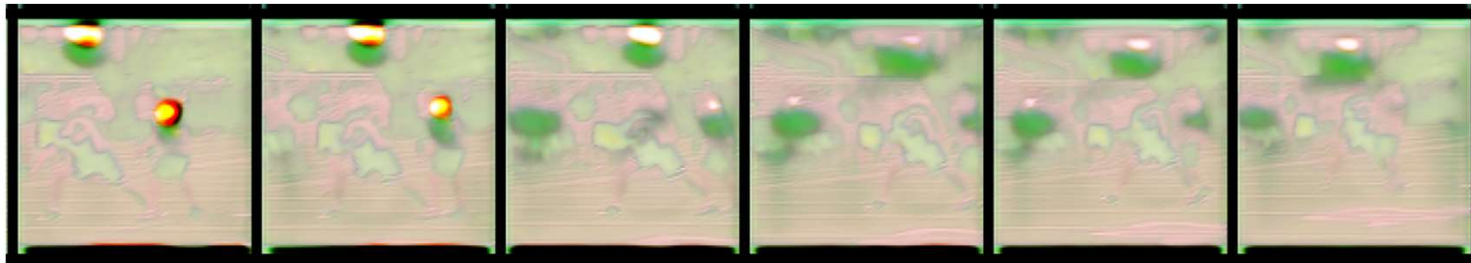
Real-world activities of daily living [3]

[3] Das, Srijan, et al. "Toyota smarhome: Real-world activities of daily living." ICCV. 2019.

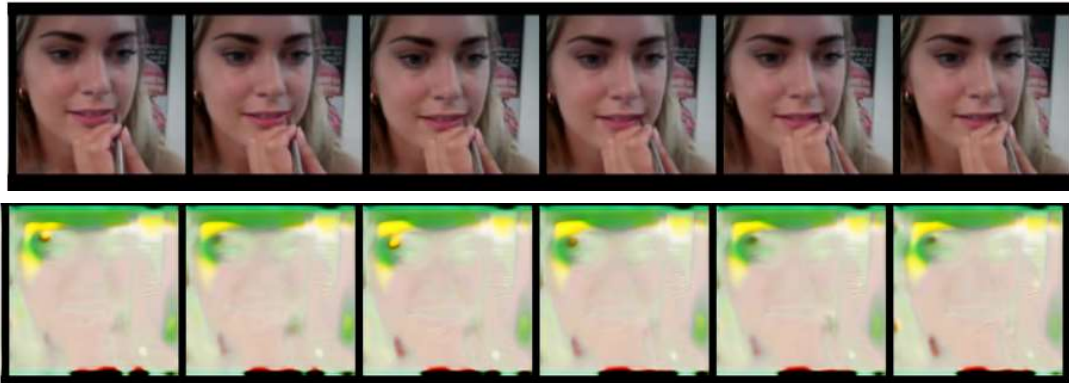
Anonymization Results



Frisby catch

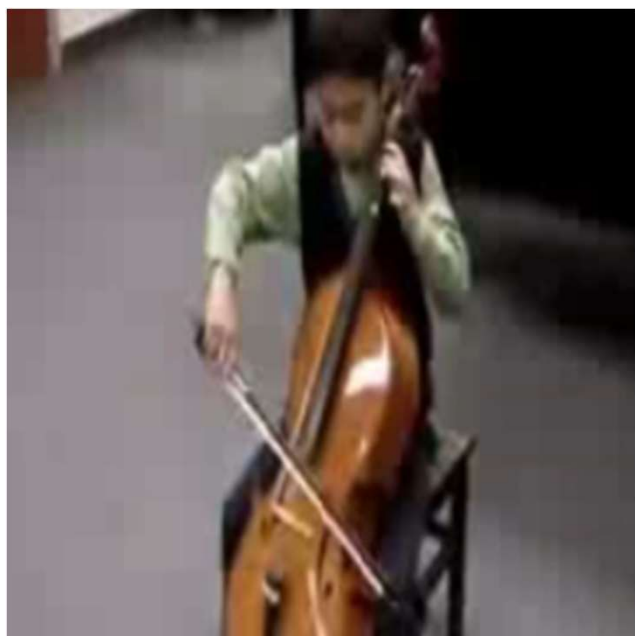


Anonymization Results

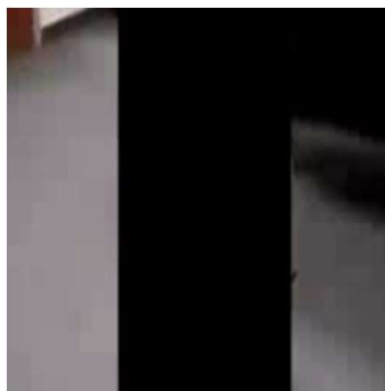


**Apply
lipstick**

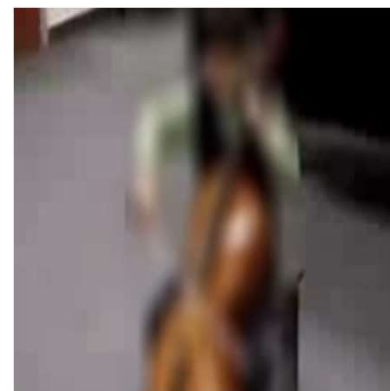
Qualitative comparison of different methods



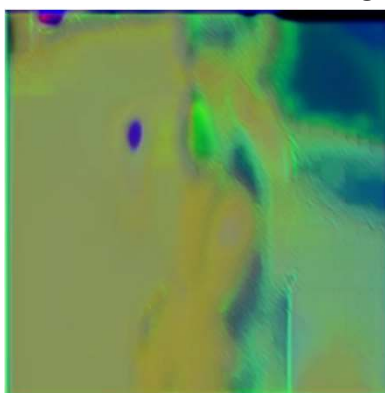
Input Video: Playing
Cello



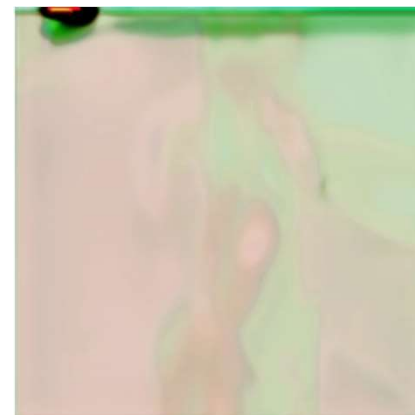
Obfuscation- Blackening



Obfuscation- Blurring



Supervised [Wu et al, TPAMI 2020]



Ours

3DMODT: Attention-Guided Affinities for Joint Detection & Tracking in 3D Point Clouds

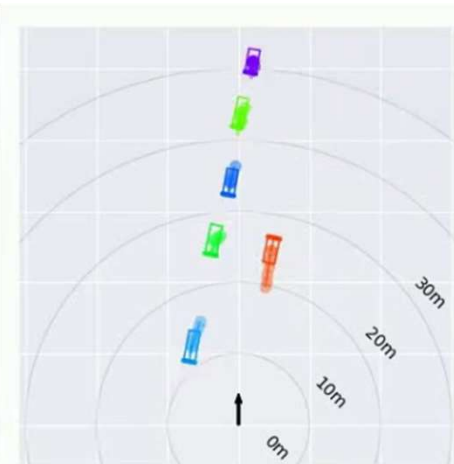
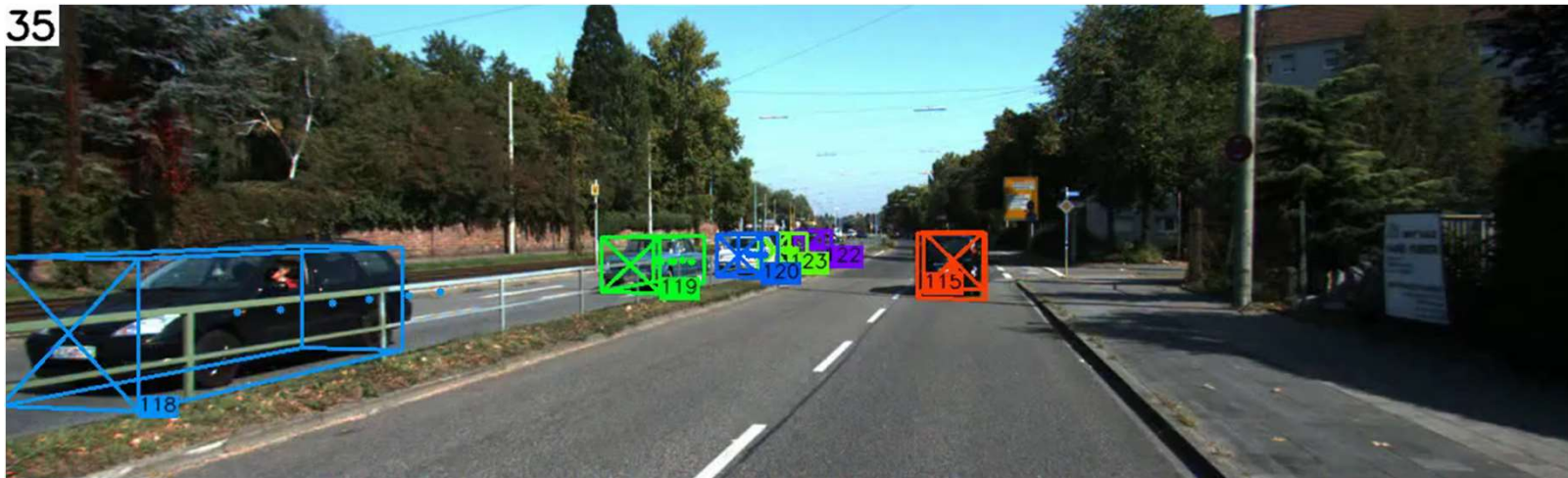
Jyoti Kini, Ajmal Mian and Mubarak Shah

Published in International Conference on Robotics and Automation, 2023



Object Detection and Tracking for Self-Driving Cars

35



Quality results under diverse conditions
Long duration tracks



****Note:** RGB images are only for visualization purposes, the input to the network is solely point cloud scans

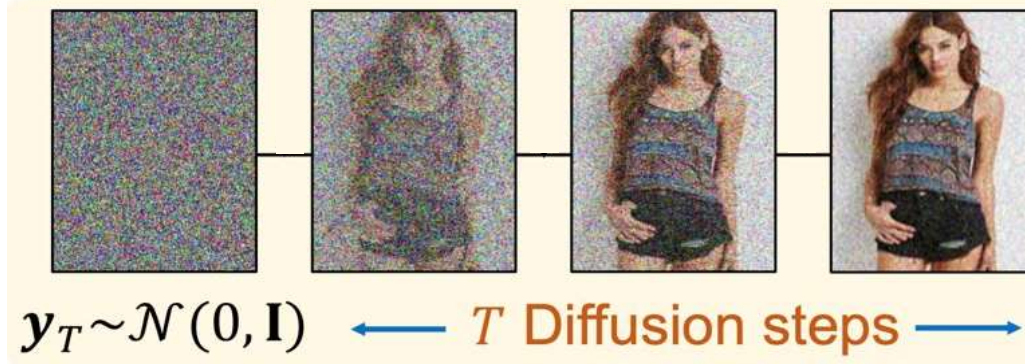
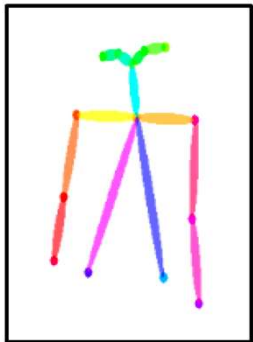
Generative AI



Person Image Synthesis via Denoising Diffusion Model

Ankan Kumar Bhunia, Salman Khan, Hisham Cholakkal, Rao
Muhammad Answer, Mubarak Shah, Fahad Shahbaz Khan



x_s  x_p  $y_T \sim \mathcal{N}(0, \mathbf{I})$ $\leftarrow T \text{ Diffusion steps} \rightarrow$ $p_\theta(y | x_s, x_p)$  y 

Results



PIDM (Ours)



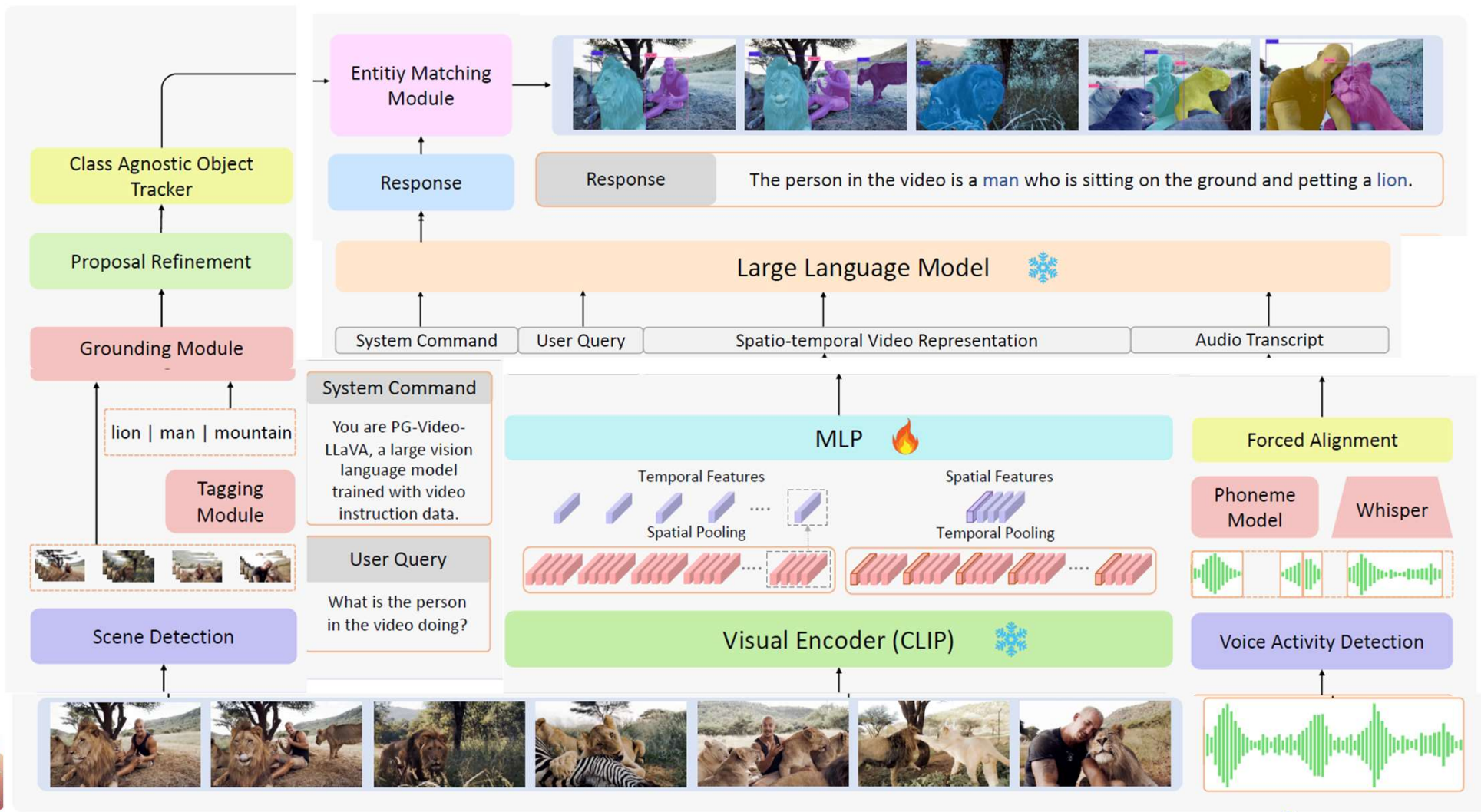
PIDM (Ours)



Chat-GPT

PG-Video-LLaVA:
Pixel Grounding **Large Video-Language Models**

Shehan Munasinghe, Rusiru Thushara, Muhammad Maaz, Hanoona
Abdul Rasheed, Salman Khan, Mubarak Shah, Fahad Khan

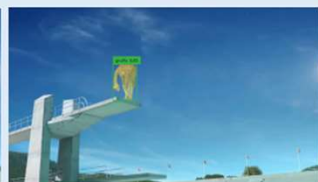
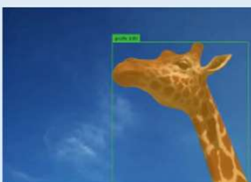




What do you see in this video?



In the video, we see a giraffe standing on a diving board, and then it jumps into the water. The giraffe is the main focus of the video, and we see it in various positions throughout the video.



What do you see in this video?



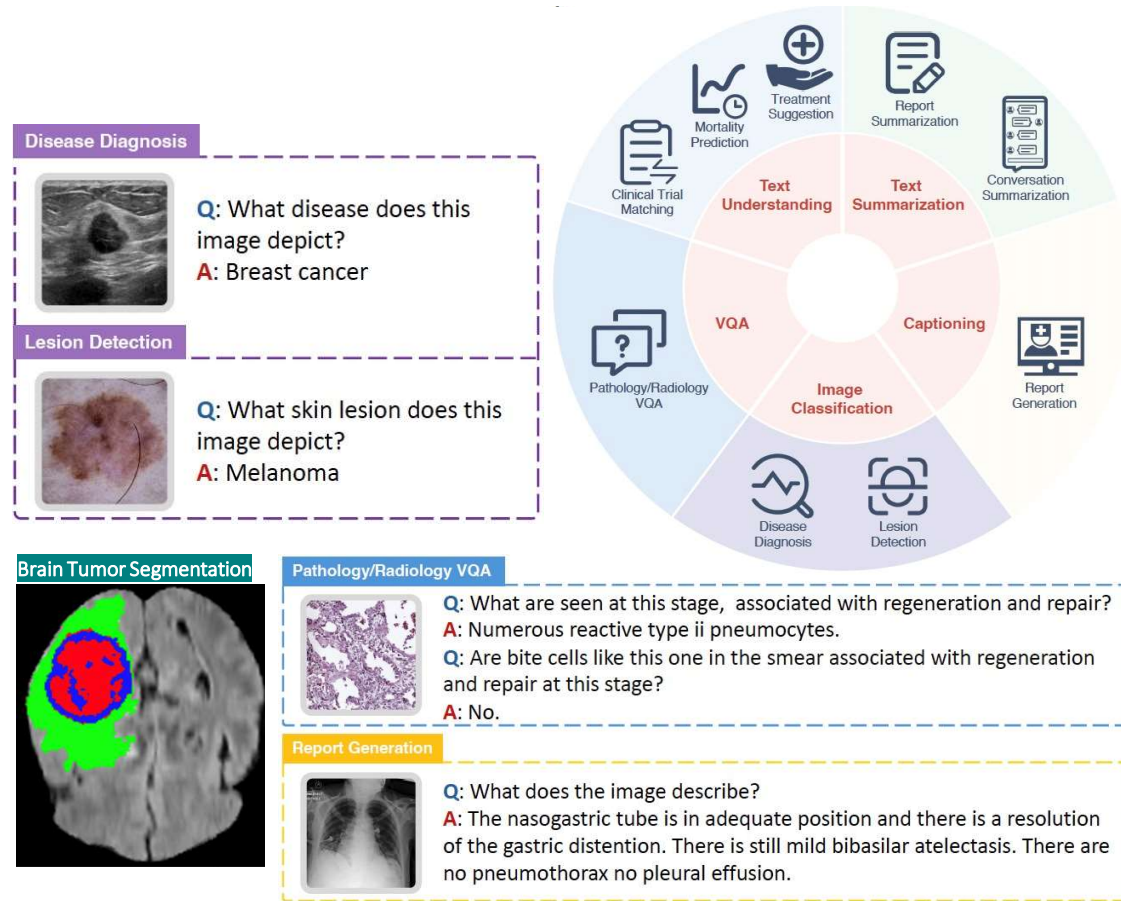
In the video, I see a large statue of a woman holding a torch in her right hand. The statue is located on top of a hill, and it is surrounded by a large body of water. The statue is lit up at night, and it is visible from a distance. The video also shows a boat passing by the statue.



BiomedGPT: a unified and generalist biomedical generative pre-trained transformer for vision, language, and multimodal tasks

Kai Zhang, Jun Yu, Zhiling Yan, Yixin Liu, Eashan Adhikarla, Sunyang Fu, Xun Chen, Chen Chen, Yuyin Zhou, Xiang Li, Lifang He, Brian D Davison, Quanzheng Li, Yong Chen, Hongfang Liu, Lichao Sun

Dr. Chen Chen: AI transformed biomedicine & healthcare



AI Initiative

AI Initiative

- The aim is to leverage success in one core area of AI, **Computer Vision**, to expand to other core areas of AI:
 - Robotics
 - Natural Language Processing (NLP)
 - Speech Recognition (SIRI, Alexa)
 - Machine Learning
- Foundational and supporting areas of AI like
 - Theory of Deep Learning (Mathematics)
 - Data Analytics (Statistics)
 - Efficient and Innovative AI computing
 - Cyber Security
 - Optical Computing
- Applications
 - Medicine
 - Fintech
 - Optics
 - Others

UCF Strategic Investment Program Invests in Artificial Intelligence

 June 29, 2022

The [UCF Strategic Investment Program](#) invests in core academic activities to support President Alexander N. Cartwright's vision that UCF will become a "University for the Future" as a top public institution and the world's leading public metropolitan research university. The investments align with areas of strategic emphasis identified by UCF's strategic plan as approved by its Board of Trustees.

Through Artificial Intelligence Initiative close to twenty new AI faculty will be hired, who will be tenured in 5 different colleges: College of Engineering and Computer Science, College of Medicine, College of Sciences, College of Optics and Photonics and College of Business.

Artificial Intelligence (AI) is transforming the world and everyday lives — from facial recognition on phones to smart home devices to security measures implemented for online banking. By some estimates, the global artificial intelligence market will grow sixteen fold from 2020 to 2028, reaching nearly \$1 trillion.

UCF seeks to be a leading AI research and workforce provider in offering a top-quality education in this field for undergraduate and graduate students. An interdisciplinary team led by Mubarak Shah, professor of Computer Science, will pursue groundbreaking technologies to benefit society and strengthen AI research, security and commercialization in Orlando, state of Florida and the

AI Initiative is Supported by Six Colleges

CECS (College of Engineering & Computer Science)

COS (College of Sciences)

COB (College of Business)

COM (College of Medicine)

CREOL (College of Optics and Photonics)

CGS (College of Graduate Studies)

This is BIG!

- Approximately 30 faculty lines and \$3 million in non-recurring funds.
- Aim is to **scale** up the current **excellence** in Computer Vision and to other areas of AI:
 - Robotics
 - Natural Language Processing
 - Machine Learning
 - Speech Recognition
 - Foundational areas of AI
 - Application areas: Medicine, Business, Optics
- **Impact = Excellence x Scale**
- To have the highest possible **impact** on students, community, and Science.

AI Initiative

- 10 Faculty hired
 - 1 in COB, 1 in COM
 - 2 in COS
 - 6 in CECS (3 in CS, 2 in ECE, 1 in MSE)
 - Three females
 - Eight onboard
- Two more offers in preparation
- 4 more interviews this and next week



Artificial Intelligence Initiative (Aii)

“

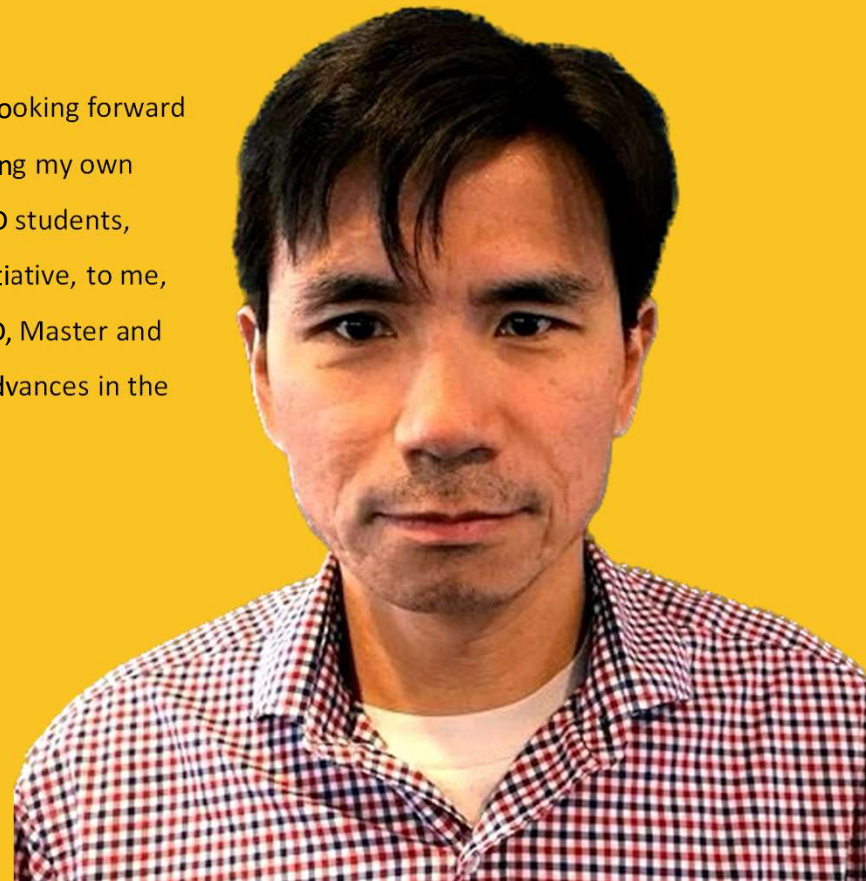
Having been in industrial research for 18 years (time flies), I am looking forward to working with brilliant students under the AI Initiative. I remember the years during my own PhD study that the robust and dynamic environment made up of smart people (PhD students, faculties, postdocs) often produce great results beyond my expectations. The AI Initiative, to me, brings together some of the greatest minds in AI, powered by a brilliant core of PhD, Master and Undergrad students at UCF. I am hoping to work with them to achieve significant advances in the field of AI.

”

Dr. Ser Nam Lim

Associate Professor

Department of Computer Science





“Exploring the frontiers of knowledge, I thrive at the crossroads of deep learning and practical applications, from computer vision to material science. With a blend of research and industry experience, I'm dedicated to making technology work for real-world solutions.”

Dr. Shruti Vyas

Department of Materials Science Engineering



Artificial Intelligence Initiative (Aii)

“

I am deeply honored to be a part of the AI initiative and to work closely with an exceptional group of researchers and students at UCF. The potential of AI is boundless, yet it also presents significant challenges. Under this visionary initiative, I look forward to addressing such critical challenges of our time and also making AI beneficial and safe for generations to come.

”

Dr. Shahana Ibrahim

Assistant Professor

Department of Electrical and Computer Engineering





Artificial Intelligence Initiative (Aii)

“

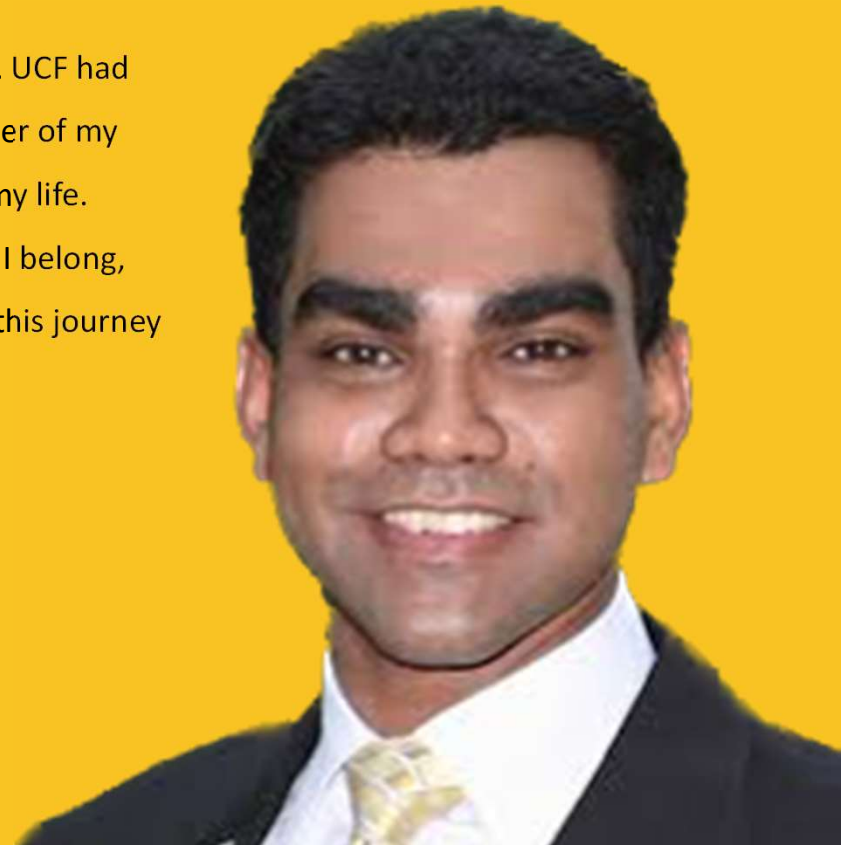
I am extremely excited to be a part of the UCF AI Initiative. UCF had an immense impact on my academic life. From my advisers to every member of my dissertation committee, I am immensely grateful for their contribution to my life. After spending 7 years in two leading academic places, I am back to where I belong, and I want to put my best efforts into making UCF and I both successful in this journey together.

”

Dr. Aritra Dutta

Assistant Professor

Department of Mathematics





“As a recent Ph.D. graduate, I am in the process of delving deeper into the realm of AI, continually expanding my understanding of this dynamic field. My exploration of AI unfolds through my research endeavors; each idea, algorithm, and theorem I develop unveils the remarkable potential of AI. Joining the AI initiative program at UCF feels like setting forth on an odyssey through a vast expanse of innovation. Within this initiative, the pursuit of knowledge knows no boundaries, and the future takes shape with every line of code I create and every idea I explore.

Dr. Yue Wang

Department of Electrical and Computer Engineering



Artificial Intelligence Initiative (Aii)

“

I am excited to embark on a new journey and collaborate with AI researchers from diverse fields to position UCF as a leading player in the global AI landscape. With a Computer Science background that spans four continents and nine countries, I will contribute to the AI initiative by bridging the gap between the Finance and AI domains through my research and teaching.

”

Dr. Cuneyt Akcora

Associate Professor

Department of Finance



Artificial Intelligence Initiative (Aii)



Artificial Intelligence Initiative (Aii)

“

I am excited to start my journey as a faculty under the Artificial Intelligence Initiative (Aii) at UCF. My research aims to integrate theoretical foundations of optimization and reinforcement learning with real-world applications, focusing on developing large-scale autonomous AI systems that are Safe, Robust, Adaptive, and Aligned with human preferences and social goals.

”

Dr. Amrit Singh Bedi

Assistant Professor

Department of Computer Science



“

The UCF AI Initiative offers an exceptional platform for fostering multidisciplinary and collaborative AI research efforts. I look forward to collaborating with outstanding researchers and students to advance translational biomedical AI and unleash its vast potential in technological breakthroughs. Biomedical AI, with its boundless capabilities, stands poised to enhance clinical workflows, expedite drug discovery processes, optimize personalized treatments, and ultimately contribute to improved patient outcomes. Being part of this journey and contributing to healthcare AI innovation is an exciting and fulfilling endeavor.

”

Dr. Laura Brattain

Associate Professor

Department of Internal Medicine

Secondary Joint Appointment with Department of CS and ECE



Artificial Intelligence Initiative (Aii)



“Thrilled to embark on this incredible journey as a new Assistant Professor as part of the UCF Artificial Intelligence Initiative, with the Department of Computer Science as my academic home unit! Here’s to exploring groundbreaking frontiers in AI and collaborating with brilliant minds to shape the future. Let the adventure begin!”

Dr. Shubhra Kanti Karmaker
Department of Computer Science



Artificial Intelligence Initiative (Aii)

“

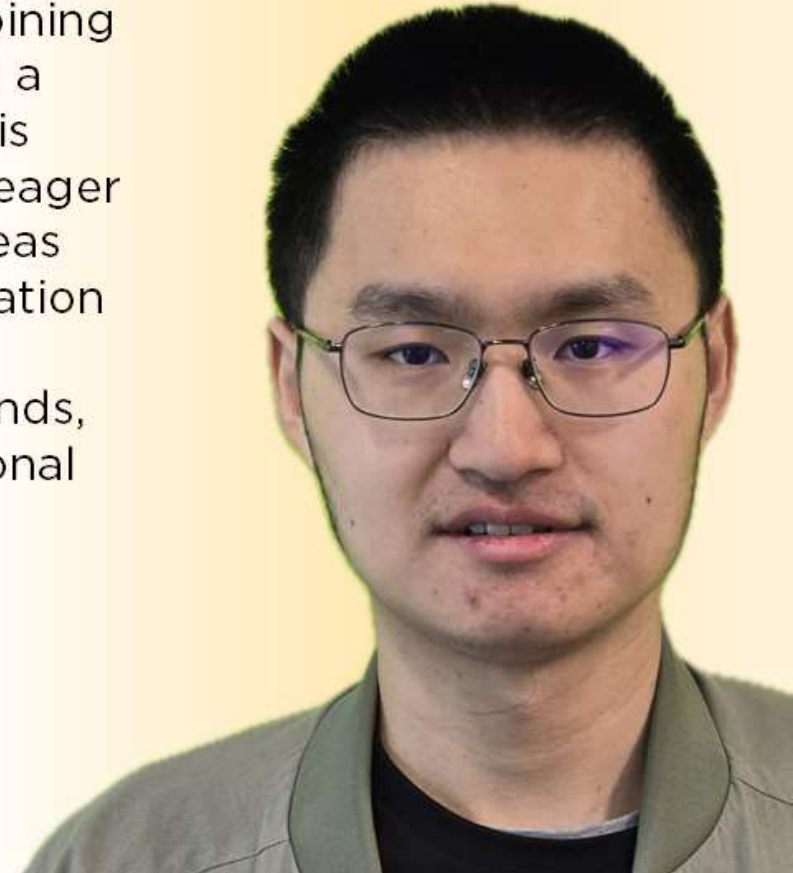
After four years in industry following my PhD, joining UCF's Artificial Intelligence Initiative (Aii) marks a significant milestone in my career. Currently, AI is revolutionizing a wide range of fields, and I am eager to demonstrate its vast potential in scientific areas like statistics, scientific computing, and optimization through my work. UCF Aii offers an excellent platform for researchers from diverse backgrounds, and I am excited to work alongside the exceptional researchers and students here to push the boundaries of what AI can achieve.

”

Dr. Jialin Liu

Assistant Professor

Department of Statistics & Data Science



Artificial Intelligence Initiative (Aii)

Drs. Atia and Wang receive DARPA Award totaling \$1.23M

Exciting news! The “Distributionally Robust Approaches to Transfer Learning” project, led by PI Dr. George Atia and Co-PI Dr. Yue Wang, has been awarded a prestigious DARPA Award totaling \$1.23M! This groundbreaking initiative, part of DARPA’s Transfer from Imprecise and Abstract Models to Autonomous Technologies Program, is set to revolutionize AI in the autonomy transfer domain by effectively bridging the gap between simulated and real-world environments. With innovative techniques at the forefront, the investigators are focused on enhancing model performance across diverse domains, enabling knowledge transfer between simulation and real-world applications. Closing the sim-to-real gap has far-reaching implications for various sectors including defense, healthcare, transportation, and beyond.



Three Papers Accepted in ICLR 2024

The International Conference on Learning Representations (ICLR) is the premier gathering of professionals dedicated to the advancement of the branch of artificial intelligence called representation learning, but generally referred to as deep learning.

Members of UCF's Artificial Intelligence Initiative (Aii) and their collaborators had three papers accepted into the [\(ICLR 2024\)](#) conference that will take place in Vienna, Austria from May 7-11, 2024.

The h5-index is the [h-index](#) for articles published in the last 5 complete years. According to Google Scholar Metrics, the International conference on Learning Representations (ICLR) is ranked 10th in the [h5-index rankings](#) on https://scholar.google.com/citations?view_op=top_venues&hl=en.

You can access the [Aii Publications Page](#) for enhanced search capabilities.

Chakraborty, Souradip; Bedi, Amrit Singh; Koppel, Alec; Manocha, Dinesh; Wang, Huazheng; Wang, Mengdi; Huang, Furong

PARL: A Unified Framework for Policy Alignment in Reinforcement Learning Conference

International Conference on Learning Representations (ICLR), Vienna, Austria, 2024.

Abstract | BibTeX | Links:  

Shrivastava, Gaurav; Lim, Ser Nam; Shrivastava, Abhinav

Video Decomposition Prior: Editing Videos Layer by Layer Conference

Eleventh International Conference on Learning Representations (ICLR) 2023, 2024.

Abstract | BibTeX | Links:  

Shamsi, K.; Poursafaei, F.; Huang, S.; Ngo, B.; Coskunuzer, B.; Akcora, Cuneyt

Graphpulse: Topological representations for temporal graph property prediction Conference

Eleventh International Conference on Learning Representations (ICLR) 2023, 2024.

Abstract | BibTeX | Links:  

Six Papers Accepted at ICML 2024

The 41st International Conference on Machine Learning (ICML 2024) will be held in Vienna, Austria, July 21st – 27th.

Members of UCF's Artificial Intelligence Initiative (Aii) and their collaborators have 6 accepted papers into the [ICML 2024](#) conference.

The h5-index is the [h-index](#) for articles published in the last 5 complete years. According to Google Scholar Metrics, the International conference on Machine Learning (ICML) is ranked 5th in the [h5-index rankings](#) for the Engineering & Computer Science subcategory and 17th in the [h5-index rankings](#) for top venues.

You can access the [Aii Publications Page](#) for enhanced search capabilities.



Five Papers Accepted in IROS-2024

(International Conference on Intelligent Robots and Systems)



Twenty Papers Accepted in ECCV-2024

(European Conference on Computer Vision)





College of Engineering and Computer Science

UCF's New Master's Degree Creates Pathway to Careers in Robotics for Students

Students who enroll in the program will learn to analyze, design and develop the robotics and autonomous systems that are used in society.



Students use controllers to operate some of the robot dogs housed in robotics labs within the Department of Electrical and Computer Engineering. (Photo by Kellie Warren)

TapeMeasure, UCF's robotic dog used by students for research, became an instant sensation during the 2023 Space Game at FBC Mortgage Stadium, captivating the crowd as soon as it stepped onto the field. Photos and videos of the four-legged machine flooded social media, and several media outlets featured it in their newscasts.

Now students with a passion for robotics can take their interest and their education to a new level. The [College of Engineering and](#)

Future Plans

- MS in Machine Learning
- MS in Natural Language Processing
- Ph.D. in Computer Vision
- BS in AI
- Offer some degrees fully online

- Research Experience for High School Teachers and Students



Next Steps

- Strengthen Computer Science at UCF
 - Hire more faculty in Computer Science (38 Tenured/Tenured Track faculty)
 - UCF CS has 6,000+ students, which is 43% of all CECS students
 - Students-to-faculty (tenured/tenure track) ratio: UCF: 1:63; CECS: 1:86; **CS: 1:162**
 - Tenured/Tenured Track faculty: ASU: 90, UMD: 62, Georgia Tech: 50
 - Hire more GTAs
 - This will improve quality of education
 - This will help faculty to focus more on research
 - This will increase number of Ph.D. students
- Invest more in workforce Development
 - More graduate fellowships
 - More undergraduate mentoring
- Improve Computing infra-structure (GPUs)





UCF CENTER FOR RESEARCH IN COMPUTER VISION

Overview of Center for Research in Computer Vision (CRCV)

Artificial Intelligence Initiative (Aii)

Mubarak Shah

Center for Research in computer Vision

University of Central Florida

shah@crcv.ucf.edu

<https://www.crcv.ucf.edu/>