

You Can Help Shape the Future of AI

Mubarak Shah
Director, Institute of Artificial Intelligence
University of Central Florida
June 18, 2026

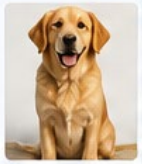
What We Explored in Our AI Journey

Three Big Ideas. Many Skills. Endless Possibilities.

COMPUTER VISION

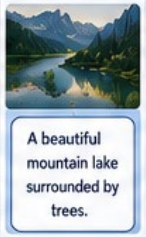
Teaching Computers to See

Classification	Detection	Segmentation	Vision-Language	Generative
What is it?	Where is it?	Which part is it?	What does it mean?	Create something





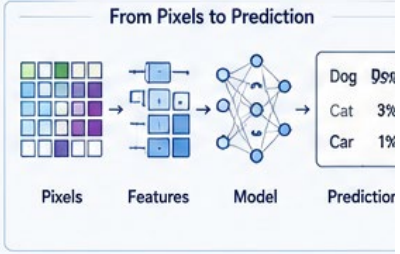






What We Learned

- Images are made of pixels.
- AI learns patterns, features, and important clues.
- Good data + good labels = smarter models.
- We built and improved our own image classifiers!



Big Idea: Computers can learn to understand images, just like we do!

HANDS-ON AI

Building. Testing. Improving.

Our 5-Step Project

1. Choose a topic
2. Train a classifier
3. Find mistakes
4. Improve the model
5. Present your demo



Example Project: Hat / Shoes / Clothes



Learn by doing is the best way to learn.

Test, improve, and try again.

You built real AI models!

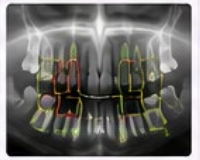
Big Idea: You have the tools to create AI and solve real problems!

MEDICAL AI

AI for Health. AI for Good.

Medical Imaging	Data Annotation	Bias & Quality	Dental AI
X-ray, CT, MRI	Labeling data for AI to learn	Fair, accurate, and reliable AI	Detect cavities, analyze X-rays, assist dentists









What We Learned

- AI in medicine can help doctors and improve patient care.
- Good data and expert labels are essential.
- Bias and fairness matter in health AI.
- AI can make a real difference in the world!

Doctors + AI: Better Together



Big Idea: When used responsibly, AI can make healthcare smarter and more human.

Skills You Gained

Problem Solving · Critical Thinking · Creativity · Teamwork · AI Literacy · Real-World Impact

What's Next?

Keep being curious. Keep asking questions. Keep building the future!



You Explored. You Built. You Learned. *This is just the beginning of your AI future!*

U.S. Has a Shortage of Qualified Researchers

★ *The Challenge. The Opportunity. The Future Is Yours.* ★

The Path from Middle School to Ph.D.

A Small Percentage — But Every Ph.D. Started in Middle School

In 1992 there were **3,500,000** 8th graders in the U. S.

700,000 of these students expressed interest in science and engineering careers.

In 1996, when they entered college, **330,000** retained their interest.

By 2000, **200,000** had actually graduated in scientific or engineering disciplines.

Only **65,000** of these men and women entered graduate school in science or engineering.

By 2004, just **27,000** graduated with Ph.D.s

To have only **0.8%** of these students end up with doctoral degrees does not seem promising!

But remember: Every Ph.D. was once a middle school student with a dream.

WHERE ARE THE GIRLS IN STEM?



74%

of middle school girls express an **interest in STEM.**

Only **0.4%**

choose **computer science** as a major when they get to college.





We need more girls to see themselves as future innovators, creators, and leaders in technology!

Numbers Tell a Story. You Write the Future.

- Many future scientists and engineers **do not decide** on STEM careers in middle school.
  Interest changes over time, and **exposure** to **good teachers, projects, mentors, and opportunities** can dramatically alter a student's path.

- The goal is not to be one of the **few** who **start interested.**
  The goal is to **keep your curiosity alive** long enough to discover what excites you.

- **"I am not showing these numbers to discourage you.**
  I am showing them because **every Ph.D.** was once a **middle school student** sitting in a classroom like this.



Your journey is just beginning.
Dream. Learn. Explore. Create.
The world needs what only **YOU** can do.

My Journey: From Lakhi Ghulam Shah to AI Research

Lakhi Ghulam Shah → Hyderabad → Karachi → Eindhoven → Detroit → Orlando

1 Lakhi Ghulam Shah, Sindh, Pakistan
Where I grew up









A small town in Sindh – simple beginnings, big dreams.

2 Hyderabad, Sindh, Pakistan
High School











Left my village and moved to Hyderabad for high school.

3 Karachi, Sindh, Pakistan
Undergraduate Studies











Moved to Karachi for my B.S. in Electrical Engineering.

4 Eindhoven, Netherlands
Research Experience with Philips











Spent one year with Philips, one of the world's leading technology companies.

5 Detroit, Michigan, USA
Ph.D. Studies











Earned my Ph.D. at Wayne State University.

6 Orlando, Florida, USA
Professor & AI Researcher











Joined UCF in 1986 and built a research program in Computer Vision and AI.

A journey of education, curiosity, hard work, and amazing opportunities.

Dream Big. Learn Always. The world is yours!



Key Distances (Approx.)

Lakhi Ghulam Shah → Hyderabad	~120 miles
Hyderabad → Karachi	~150 miles
Karachi → Eindhoven	~3,700 miles
Eindhoven → Detroit	~4,000 miles
Detroit → Orlando	~960 miles
Total around the world!	~8,930 miles

From a small village in Sindh to a career in AI across the globe.

What did I learn?

Every place taught me something that shaped my journey.

Hyderabad



Learned independence.

Karachi



Learned engineering.

Eindhoven



First international experience.

Detroit



Learned how to do research.

Orlando



Built a research center.

Places change, but curiosity, hard work and passion will take you anywhere.

My Timeline at UCF

TOP CITED AUTHORS AT UCF

Recognized for Research Impact and Scholarly Excellence

AUTHOR	AFFEEATION AREAS	CITED BY
 **1. Mubarak Shah** Trustee Chair Professor of Computer Science, University of Central Florida	Computer Vision	**116,925** Google Scholar
 **2. Shin-Tson Wu** Trustee Chair Professor, College of Optics and Photonics, University of Central Florida	AR/VR displays mini-LED/OLED/Micro-LED LCoS and projection optics Liquid crystal planar optics	**62,176** Google Scholar
 **3. Sudipta Seal** University of Central Florida	Engineering Science Medicine	**61,894** Google Scholar
 **4. Sampath Parthasarathy** University of Central Florida	Atherosclerosis Diabetes Oxidative stress Alzheimer's and Crohn's disease	**53,517** Google Scholar
 **5. Van Stryland E* or Van Stryland E*** Professor of Optics, CREOL, University of Central Florida	Optics Lasers Nonlinear optics	**49,846** Google Scholar
 **6. Peter A. Hancock** Professor of Psychology, University of Central Florida	Psychology Human Factors Ergonomics	**48,433** Google Scholar

These authors are among the most cited researchers at UCF, making significant contributions to their fields and advancing knowledge worldwide.

Source: Google Scholar Profiles (Data as of May 2024)

CSRankings: Computer Science Rankings

CSRankings is a metrics-based ranking of top computer science institutions based on faculty publications at selective conferences.

UCF RANKING HIGHLIGHT

University of Central Florida ranks **#9 in the USA** in Computer Vision!

USA | 2016 | 2026 | All | AI | Systems | Theory | Interdisc.

All Areas

AI

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

Systems

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

UCF

UNIVERSITY OF CENTRAL FLORIDA

USA RANK

#9

IN COMPUTER VISION

COUNT FACULTY

22

CS RANKING SCORE

60.5

Rank	Institution	Count Faculty	Score
1	Carnegie Mellon University	29	98.0
2	Stanford University	23	91.7
3	University of California - San Diego	31	90.2
4	Massachusetts Inst. of Technology	36	88.7
5	University of California - Berkeley	25	87.0
6	University of Illinois at Urbana-Champaign	30	84.6
7	Johns Hopkins University	20	72.3
8	University of Texas at Austin	20	66.1
9	**University of Central Florida**	**22**	**60.5**
10	University of North Carolina	12	56.7
11	University of Wisconsin - Madison	15	53.5
12	Cornell University	26	52.8
13	University of Washington	13	50.4
14	University of Southern California	14	48.6
15	Georgia Institute of Technology	17	46.2

Source: CSRankings.org | Metrics-based ranking using faculty publications at top-tier conferences (2016–2026)

csrankings.org

TOP PUBLICATION VENUES

RESEARCH IMPACT ACROSS LEADING GLOBAL OUTLETS

High-impact contributions published in the world's most prestigious journals and conferences.

RANK	PUBLICATION VENUE	h5-index	h5-median
1.	Nature Journal	490	784
2.	IEEE/CVF Conference on Computer Vision and Pattern Recognition Conference	450	702
3.	The New England Journal of Medicine Journal	441	854
4.	Science Journal	415	653
5.	Nature Communications Journal	399	509
6.	The Lancet Journal	375	712
7.	Neural Information Processing Systems Conference	371	637
8.	International Conference on Learning Representations Conference	362	652
9.	Advanced Materials Journal	330	440
10.	Cell Journal	317	528

PAPER REVIEW PROCESS

JOURNAL REVIEW PROCESS

1. **Submit, no deadline**
   Author submits the manuscript to the journal.
2. **Assigned to an Associate Editor (AE)**
   The manuscript is assigned to an Associate Editor.
3. **AE assigns to reviewers**
   The Associate Editor selects and invites reviewers.
4. **Single Blind reviewers**
   Reviewers evaluate the paper without knowing the author's identity.
5. **AE makes a decision**
   Based on reviews, AE makes a decision:
   Reject, Minor revision, or Major revision
6. **Revise the paper, and resubmit**
   Author addresses the comments and submits a revised version.
7. **Decision**
   AE evaluates the revision and makes the next decision.
8. **Submit final version**
   Upon acceptance, author submits the final version for publication.

CONFERENCE REVIEW PROCESS

1. **Submit on fixed deadline**
   Authors submit the manuscript by the conference deadline.
2. **Assigned to an Area Chair (AC)**
   The paper is assigned to an Area Chair.
3. **AC assigns to reviewers**
   The Area Chair selects and invites reviewers.
4. **Double Blind review**
   Reviewers evaluate the paper without knowing the authors' or each other's identities.
5. **Rebuttal**
   Authors can respond to reviews and clarify points.
6. **ACs meet physically**
   Area Chairs discuss the papers in a meeting.
7. **Two–Three ACs make a decision**
   Final decision: Reject; accept as a poster or oral.
8. **Submit final version**
   Authors submit the final camera-ready version.
9. **Present it in the conference**
   Accepted papers are presented at the conference.

KEY DIFFERENCE | Journal reviews are typically single-blind with iterative revisions, while conference reviews are typically double-blind with a fixed deadline

DR. SHAH'S ACHIEVEMENTS

110,000+ CITATIONS | **150** H-INDEX

- **2024 CRA-E (Computing Research Association-Education) Undergraduate Research Faculty Mentoring Award,** 2024.
- **PAMI Mark Everingham Prize** for pioneering human action recognition datasets, which have played important role in the advancement of computer vision technology, 2022.
- **ACM SIGMM Test of Time Honorable Mention Award** for paper *Visual attention detection in video sequences using spatiotemporal cues*, in Proceedings of the 14th ACM International Conference on Multimedia, MM 06, 2020.
- **International Conference on Pattern Recognition 2020** Best Scientific Paper Award for *"Gabriella: An Online System for Real-Time Activity Detection in Untrimmed Security Videos"*
- **ACM SIGMM award** for Outstanding Technical Contributions to Multimedia Computing, Communications and Applications, 2019.
- **Supervised 56 Ph.D. students** to Completion.

FELLOW OF

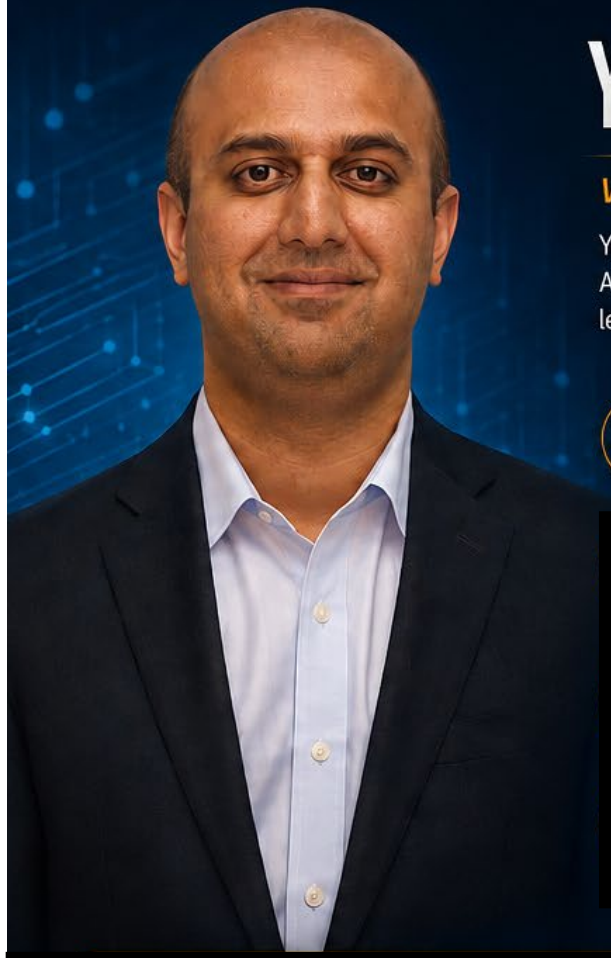
ACM
Association for Computing Machinery

AAAS
American Association for the Advancement of Science

IEEE
Institute of Electrical and Electronics Engineers

NAI
National Academy of Inventors

SPIE
The International Society for Optics and Photonics



YASER SHEIKH, PH.D.

Visionary Technologist. Entrepreneur. Leader.

Yaser Sheikh is a world-renowned leader in computer vision and AI, with a career spanning groundbeeaking research, industry leadership, and entrepreneurship.

2006

Ph.D. in Computer Vision
University of Central Florida



OMAR JAVED, PH.D.

INNOVATOR. ENTREPRENEUR. LEADER.

From pioneering research at UCF to building and leading successful companies, Omar Javed has consistently turned vision into impact at the intersection of AI, computer vision, and large-scale systems.

EARLY 2000s — UCF

UCF – Ph.D. in Computer Vision

Research in computer vision and pattern recognition under Dr. Shah.

2000s — SRI International

SRI International

Research Scientist working on advanced computer vision and multimedia technologies.

2008 — ClipMine

Founder & CEO, ClipMine

Built a cutting-edge video search and indexing platform.

2013 — twitch

ClipMine Acquired by Twitch

ClipMine was acquired by Twitch (Amazon) to power scalable video understanding.

2013 — Puppy Dog

Founder, Puppy Dog

Started a new venture focused on enabling smarter search and data discovery.

2016+ — ebay

VP of Applied Science, eBay

Leading AI and ML initiatives to enhance search, recommendations, and user experience



Celebrating 30 Years of eBay on Nasdaq – Times Square, NYC



UCF

UCF Distinguished Alumni Award

Honored for outstanding achievements and impact in technology and innovation.

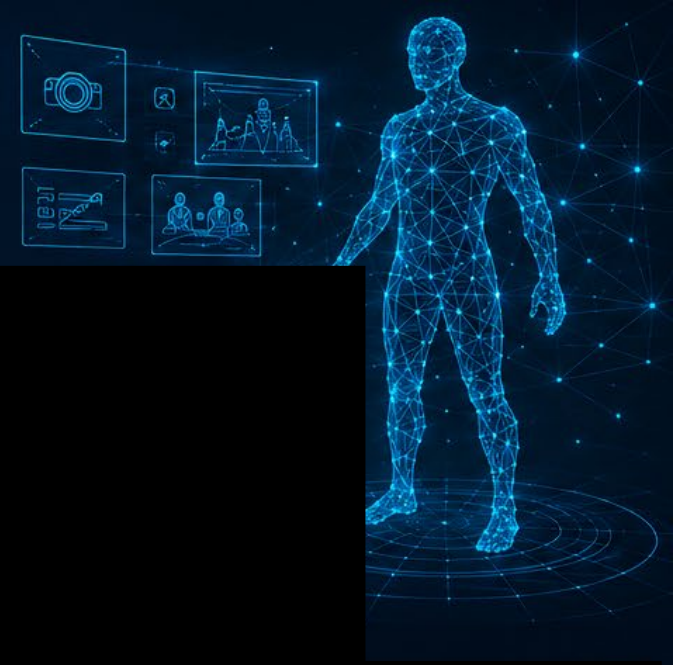
Pictured with CECS Dean Michael Georgiopoulos.



AMIR ZAMIR, PH.D.

LEADING RESEARCHER IN COMPUTER VISION & AI

Developing the next generation of AI systems that understand the visual world.



ACADEMIC JOURNEY

Ph.D. Student
University of Central Florida (UCF)
Graduated in 2013

Postdoctoral Researcher
Stanford University
2013 – 2015

Postdoctoral Researcher
UC Berkeley
2015 – 2016

Chief Scientist
Aurora Solar
2016 – 2018

UCF | Stanford University | Berkeley UNIVERSITY OF CALIFORNIA | EPFL

FROM UCF TO THE WORLD

ADVANCING THE FRONTIERS OF VISUAL INTELLIGENCE

UCF-101
VIDEO DATASET

A large-scale dataset of realistic action recognition in unconstrained videos from YouTube.

101
ACTION CATEGORIES

13,320
VIDEOS

~27 HOURS
OF VIDEO

27
AVERAGE CLIPS PER CATEGORY

YOUTUBE SOURCES
Real-world videos across diverse viewpoints, backgrounds, and conditions.

WHY UCF-101?

- ✓ Large scale and diverse
- ✓ Unconstrained environments
- ✓ High variability in viewpoint, scale, pose, lighting, background, and more
- ✓ A benchmark for action recognition research

101 ACTION CATEGORIES



Advancing the field of action recognition through a rich and challenging benchmark.

Widely used in academic research

Enables progress in computer vision and deep learning

A foundational dataset for action understanding

UCF

AFSHIN DEHGHAN, PH.D.

VISIONARY LEADER. AI INNOVATOR. UCF KNIGHT.

From UCF to Apple, Afshin Dehghan has built a remarkable career at the forefront of artificial intelligence and computer vision, leading impactful research and products that empower billions around the world.



Ph.D. in Computer Vision
University of Central Florida
Graduated in 2017

UCF

ISHAN DAVE, PH.D.

INNOVATOR. RESEARCHER. PROBLEM SOLVER.

From UCF to Adobe, Ishan is advancing the frontiers of computer vision and video understanding, transforming research into real-world impact.



With Dr. Mubarak Shah and his proud parents at Ishan's Ph.D. Graduation Ceremony (2024)

UCF

FROM UCF TO ADOBE.

INNOVATING TODAY. IMPACTING MILLIONS. INSPIRING TOMORROW.

PROUD OF OUR KNIGHT. INSPIRED BY HIS JOURNEY.

THANK YOU, ISHAN, FOR MAKING UCF PROUD!


UCF
Ishan Rajendrakumar Dave


UCF
Ishan Rajendrakumar Dave

https://daveishan.github.io/creativevr-webpage/

Thoughts on Graduate School

Why?

> "The Ph.D. is a tremendous opportunity. You get to pick an advisor in any research area you like and then you get to do research in that area, receive mentoring, think deeply on problems, publish papers, become famous, while paying zero tuition for 6 years and receiving a salary"
>
> – Harchol-Balte (CMU CS)



Pick an advisor in any research area you like



Do research in that area



Receive mentoring



Think deeply on problems



Publish papers



Become famous



Pay zero tuition for 6 years and receive a salary



*He forgot to mention travel!



Dr. Shah's Travel (2012)

A Year of Learning, Sharing, and Collaborating Around the World

"Travel opens minds,
Builds friendships,
and Inspires discovery."

Different places. Different people. One mission:
Advancing knowledge and making a difference.



Dr. Shah's Travel (2019)





Thoughts on Graduate School

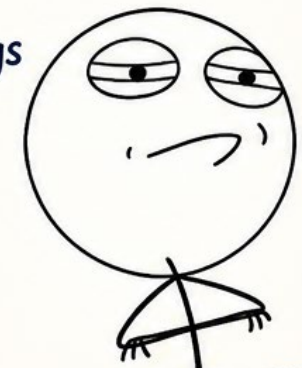
Why?

"No mom, not that kind of doctor..."

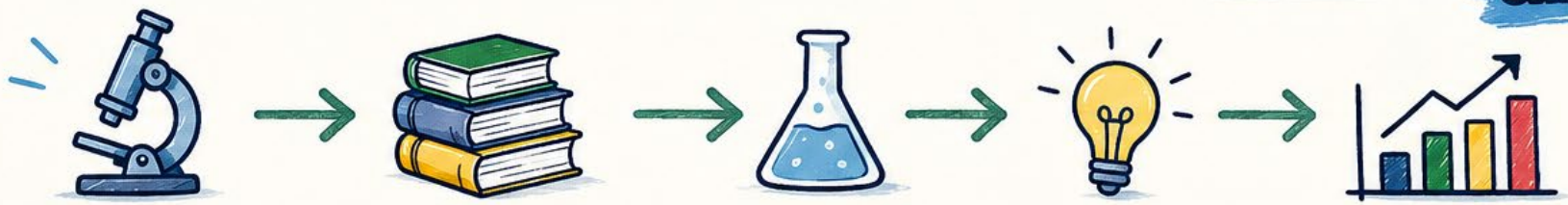
Engineering Graduate School is not like Med/Law/MBA school.

- **Emphasis on discovery** (research), not learning (class)
- **Grad students typically get paid** tuition and an adequate living stipend

> "They are smart, but naïve; you have to be careful not to tell them that the things we are expecting them to do are impossible."
>
> – Matt Manson (CMU RI)



CHALLENGE ACCEPTED.



Career Paths After Ph.D.

Job After Ph.D.

- Industry
- Academic
- National Labs
- Startups



Non-Academic Jobs

National Labs

- ARL, AFRL, NRL, PNNL, Oak Ridge Lab, JPL, Ames, Lawrence Livermore National Laboratory....

Industry

- **Commercial**
  - Google, Microsoft, Facebook, Amazon, IBM, ..
- **Defense Contractors**
  - Lockheed, Harris, Northrop Grumman, Raytheon, General Dynamics

Startups



University Professorship

- Assistant Professor
- Associate Professor
- Full Professor
- Eminent Scholar / Named Chair Professor



Why Graduate School?

Job after B.S.



- Mostly programming
- Routine, boring..
- Not much chance for growth
- Low salary

Job after Ph.D.



- Thinking, leadership
- Challenging, hard
- Large salary, security of job
- Lots of chances for growth

Graduate School Opens Doors to a Bigger Future!

- Deep Knowledge
- Leadership Opportunities
- Job Security
- Unlimited Growth

Why Research Is Fun?





Research Lets You

You can Do Research As An Undergraduate

Explore ★ Learn ★ Discover ★ Make an Impact

NSF Research Experience for Undergraduates (REU)

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



Participants' Institutions



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

2025 REU in Computer Vision Participants



Hannah Carey
University of Massachusetts Amherst



David Gardner
Boston University



Matthew Lewis
University of Central Florida



Mingen (Eric) Li
University of California Berkley



Felipe Monsalvo
Kean University



Nguyen (Syn) Nguyen
California State University Long Beach



Munish Persaud
University of Central Florida



David Rivard
Lake Superior State University



Neel Shah
Rutgers University



Erick Rodriguez
University of Central Florida



Ejiro (Adams) Ubini
University of Massachusetts Amherst

Real Research
Work on cutting-edge problems in AI and Computer Vision

Great Mentorship
Learn from experienced researchers and graduate students

Build Skills
Gain experience that prepares you for your future career

Nationwide Impact
Students from 33 states have joined and succeeded

Be Curious. Be Persistent. Be a Researcher. ★ *The Future Needs You!*

UCF CENTER FOR RESEARCH IN COMPUTER VISION

UCF Center for Research in Computer Vision

REU in Computer Vision 2026

UCF Institute of Artificial Intelligence
University of Central Florida



Deandre Bailey
University of Central Florida



Cody Hill
Mississippi State University



Jack Lamberg
Binghamton University



Charles Levy
Boston University



Valerie Lopez
University of Central Florida



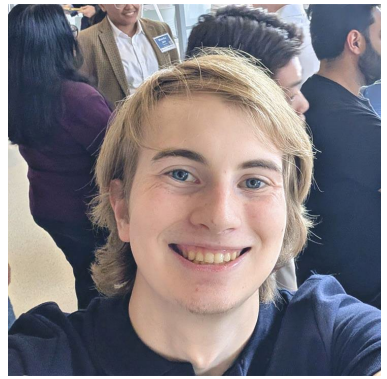
Tiffany Marcus
University of Central Florida



Shriyadita Medavaram
Virginia Polytechnic Institute and State University



Matthew Perlman
University of Massachusetts Amherst



Wyatt Petula
Pennsylvania State University



David Tang
University of Central Florida

Variety of AI Careers

"AI career = coding alone all day."



Interest	Possible AI Career
Art	AI artist / game designer
Medicine	AI doctor / medical imaging
Sports	sports analytics
Environment	climate AI
Space	NASA robotics
Music	AI music generation
Psychology	human-AI interaction
Law	AI ethics/policy
Robotics	autonomous systems
Movies	visual effects & animation
Business	AI entrepreneurship

Things AI Cannot Replace

AI is a powerful tool. But some of the most important things in life will **always** need **humans**.

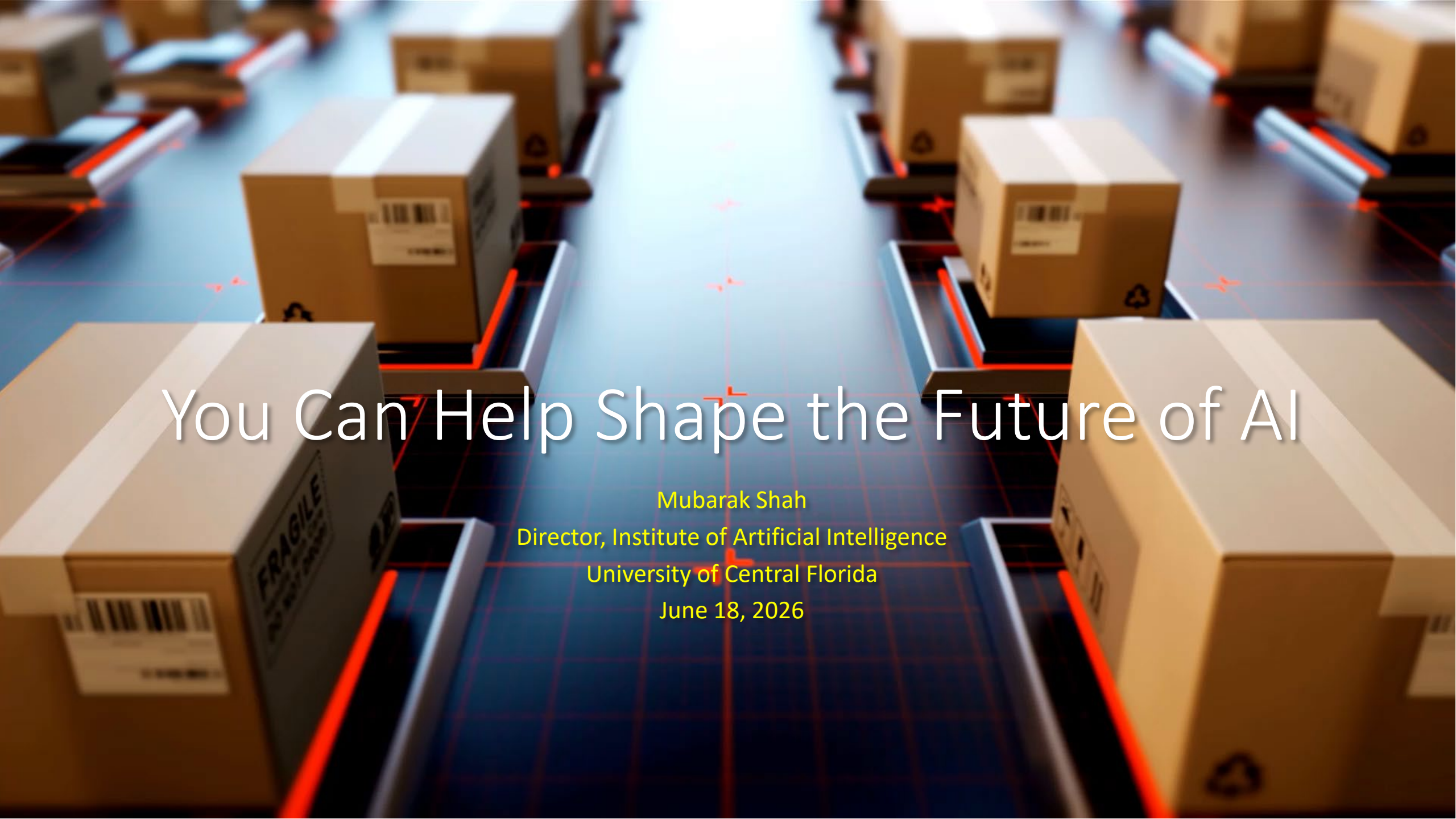
Ethical & Human Side

ADVICE

- Stay curious
- Ask questions
- Learn math and science
- Build things
- Don’t fear failure
- Use AI responsibly



> *“The students sitting in this room may create the next breakthrough in AI.”*



You Can Help Shape the Future of AI

Mubarak Shah
Director, Institute of Artificial Intelligence
University of Central Florida
June 18, 2026