ABDOLLAH ZAKERI

Houston, Texas

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RESEARCH / WORK INTERESTS

- Computer Vision and Image/video processing
- Natural Language Processings and LLMs
- Multi-Modal models and LMMs
- Computer Vision in Robotics

EDUCATION

Ph.D. in Computer Science	University of Houston, Houston, TX	GPA: 3.91	8/20/2022 - Present
Master of Artificial intelligence and robotics	Shahrood University of Technology, Iran	GPA: 3.91	9/23/2020 - 8/1/2022
Bachelor of Software Engineering	**University of Birjand,** Department of Electrical and Computer Engineering, Iran	GPA: 3.67	9/23/2015 - 3/20/2020

SELECTED PROJECTS AND WORK EXPERIENCE

- **Data Science Internship @ C3.ai**
  - o Applying SOTA image classification solutions to real-world applications
  - o Integrating and analyzing the performance of LLMs and LMMs in practical scenarios
  - o Development and deployment of a complete ML pipeline leveraging multiple fine-tuned models
- **Mushroom Localization and detection for mushroom harvesting robot**
  - o Image acquisition, labeling, and training of SOTA object detection models
  - o Integrating the object detection model with robotic arm and robot navigation system
- **Learning Disability (LD) risk assessment based on handwriting**
  - o Multi-modal classification of LD based on handwritten essays and the corresponding transcripts
  - o Cluster computing and multi-GPU training of SOTA multi-modal networks
- **Automated Essay Scoring using LLMs and LMMs**
  - o Developing multi-modal scoring models of essay using image and text modalities
  - o Alignment of text and image modalities
- **COVID severity detection for pediatric patients**
  - o Classifying the severity of COVID-19 in pediatric patients given Chest X-Ray (CXR) images and clinical data
  - o Design, training, and evaluation of deep neural networks using a private dataset provided by Texas Children's Hospital (TCH)
- **WhisperNet: Visual-Only Lip-Based Biometric Authentication**
  - o Deep Siamese network for lip-based person re-identification
- **Kavirtire company, smart quality assessment program**
  - o Python for Image pre-processing
  - o Used CNN to train a classifier that relates each tire to a predefined defection group by receiving an X-ray video of the sample.

TEACHING ASSISTANTSHIP

Advanced Programming (Object Oriented Programming)	September 2018 - December 2018
Data Structures and Algorithms	January 2019 - June 2019
Artificial Intelligence and Expert Systems	September 2019 - December 2019
Computer Vision and Image Processing	September 2019 - December 2019
Artificial Neural Networks (Master's)	September 2021 - December 2021

SKILLS

Programming Languages	C++, Python, Shell Scripts, Matlab
AI Frameworks and Libraries	Tensorflow, Keras, PyTorch, Scikit-learn, Numpy, Pandas, PyTorch Lightning, Hugging Face Transformers
Computer Vision frameworks	TorchVision, OpenCV, ImageIO, YOLO
Web Development and Design	PHP (Symfony framework), HTML, XML, CSS, Bootstrap, JavaScript(JS), JQuery, AngularJS, RESTful API, Python (Flask, Django)
Database	MySQL, SQL, Access
Other Skills	Cluster computing, Project management and Version Control systems such as Git and Trello, Object Oriented Programming, Docker

HONORS AND AWARDS

First place in 6th Birjand University Annual ACM/ICPC	May 2017
Head judge and financial sponsor of 7th Birjand University Annual ACM/ICPC	May 2018
48th place in 2016 ACM/ICPC Sharif University of Technology – Asia Region	December 2016
President of scientific computer association of Birjand University for two consecutive years	2016 - 2018
CEO and team manager of Pencode programming and software development company	July 2016 - Aug 2022
Coach of Birjand University team for 2018 ACM/ICPC Sharif University of Technology – Asia Region	December 2018
Attendance in workshop entitled "Online tools for Artificial Intelligence" held by Web Standards School	December 2018

CERTIFICATES AND ACCOMPLISHMENTS

Deep Learning Specialization certificate offered by Deeplearning.ai

Generative Adverserial Networks (GANs) Specialization certificate offered by Deeplearning.ai

Tensorflow Developer certificate offered by Deeplearning.ai

Tensorflow, Advanced Techniques Specialization certificate offered by Deeplearning.ai

PUBLICATIONS

1. Koirala, B.; **Zakeri, A.**; Kang, J.; Kafle, A.; Balan, V.; Merchant, F.A.; Benhaddou, D.; Zhu, W. Robotic Button Mushroom Harvesting Systems: A Review of Design, Mechanism, and Future Directions. Appl. Sci. 2024, 14, 9229. https://doi.org/10.3390/app14209229

2. Koirala, B, Shen, G, Nguyen, HC, Kang, J, **Zakeri, A**, Balan, V, Merchant, F, Benhaddou, D, & Zhu, W. "Development of a Compact Hybrid Gripper for Automated Harvesting of White Button Mushroom." Proceedings of the ASME 2024 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference. Volume 7: 48th Mechanisms and Robotics Conference (MR). Washington, DC, USA. August 25–28, 2024. V007T07A036. ASME. https://doi.org/10.1115/DETC2024-143056

3. Koirala, B.; Kafle, A.; Nguyen, H.C.; Kang, J.; **Zakeri, A.**; Balan, V.; Merchant, F.; Benhaddou, D.; Zhu, W. A Hybrid Three-Finger Gripper for Automated Harvesting of Button Mushrooms. Actuators 2024, 13, 287. https://doi.org/10.3390/act13080287

4. Vuong D Nguyen, Samiha Mirza, **Abdollah Zakeri**, Ayush Gupta, Rahma Aloui, Khadija Khaldi, Pranav Mantini, Shishir Shah, Fatima Merchant, (2024) Tackling Domain Shifts in Person Re-Identification: A Survey and Analysis. *5th Workshop on Continual Learning in Computer Vision, CVPR 2024*

5. **Abdollah Zakeri**, Mulham Fawakherji, Jiming Kang, Bikram Koirala, Venkatesh Balan, Weihang Zhu, Driss Benhaddou, Fatima A. Merchant, (2024) M18K: A Comprehensive RGB-D Dataset and Benchmark for Mushroom Detection and Instance Segmentation. *Computers and Electronics in Agriculture* (Under Review)

6. Hosseini, S.A., Eshghi, A., Mohammadi, S., **Zakeri, A.** (2024) Content-Based Image Retrieval Using Local Average Binary Pattern and Joint Probability Distribution of Color Channels, *Signal, Image and Video Processing(Under Review)*

7. **Zakeri, A.**, Hassanpour, H., Khosravi, M.H., Nourollah, A.M. (2024) WhisperNetV2: SlowFast Siamese Network For Lip-Based Biometrics. *IEEE Transactions on Biometrics, Behavior, and Identity Science* (Under Review)

8. **Zakeri, A.**, Hassanpour, H. WhisperNet: Deep Siamese Network For Emotion and Speech Tempo Invariant Visual-Only Lip-Based Biometric. 7th International Conference on Signal Processing and Intelligent Systems (2021). Shahrood University of Technology, Faculty of Computer Engineering.

9. **Zakeri, A.**, Hedayati, R., Khedmati, M., & Taghipour-Gorjikolaie, M. (2021). Classification of jujube fruit based on several pricing factors using machine learning methods. (ArXiv Pre-print)

REFERENCES

Prof. Fatima Merchant fmerchant@uh.edu	Department of Engineering Technology University of Houston
Prof. Driss Benhaddou dbenhaddou@uh.edu	Department of Engineering Technology University of Houston