# Ahmed Taha

Research Scientist at WhiteRabbit.AI
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## Research Interests

Deep Learning, Machine Learning, Computer Vision, Artificial Intelligence.

## Technical Skills

Python, PyTorch, Tensorflow, Keras, JAVA, C/C++, MATLAB, mex files.

## Education

**University of Maryland** GPA: 4.0 / 4.0 Sep 2015 - May 2021
Ph.D. Student in CS Advisor: Prof. Larry Davis, Abhinav Shrivastava
Thesis: Closing the Gap between Classification and Retrieval Models
Thesis Committee: David Jacobs, Ramani Duraiswami. Tom Goldstein, Behtash Babadi

**Arab Academy For Science And Technology** Dec 2011 - Jan 2014
Master Degree in business Administration - MBA GPA: 3.83 / 4.0.

**Alexandria University, Egypt** GPA: 3.81/4.0 Sept 2004 - July 2009
B.S., Computer and Systems Engineering Ranked $8^{th}$

**Alexandria University, Egypt** GPA 3.66/4.0 Sept 2011 - Aug 2015
Studied Mathematic Engineering. Advisor: Dr. Marwan Torki.

## Publications

[C15] Yen Nhi Truong Vu, Dan Guo, **Ahmed Taha**, Jason Su, Thomas Paul Matthews.
★ M&M: Tackling False Positives in Mammography with a Multi-view and Multi-instance Learning Sparse Detector.
International Conference on Medical Image Computing and Computer-Assisted Intervention (**MICCAI2023**)

[C14] Trevor Tsue, Brent Mombourquette, **Ahmed Taha**, Thomas Paul Matthews, Yen Nhi Truong Vu, Jason Su.
★ Problems and Shortcuts in Deep Learning for Screening Mammography.
(**arXiv 2023**)

[C13] **Ahmed Taha***, Nhi Truong Vu*, Brent Mombourquette, Thomas Matthews, Jason Su, Sadanand Singh.
★ Deep is a Luxury We Don't Have.
International Conference on Medical Image Computing and Computer-Assisted Intervention (**MICCAI2022**)

[C12] **Ahmed Taha**, Alex Hanson, Abhinav Shrivastava, Larry Davis.
★ SVMax: A Feature Embedding Regularizer.
**arXiv 2021**

[C11] **Ahmed Taha**, Abhinav Shrivastava, Larry Davis.
★ Knowledge Evolution in Neural Networks.
Computer Vision and Pattern Recognition (**CVPR2021 Oral**)

[C10] **Ahmed Taha**, Xitong Yang, Abhinav Shrivastava, Larry Davis.
★ A Generic Visualization Approach for Convolutional Neural Networks.
European Conference on Computer Vision (**ECCV2020**)

[C9] **Ahmed Taha**, Yi-Ting Chen, Teruhisa Misu, Abhinav Shrivastava, Larry Davis.
★ Boosting Standard Classification Architectures Through a Ranking Regularizer.
Winter Conference on Applications of Computer Vision (**WACV2020**)

[C8] **Ahmed Taha**, Yi-Ting Chen, Teruhisa Misu, Abhinav Shrivastava, Larry Davis.
★ Unsupervised data uncertainty learning in visual retrieval systems.
**arXiv 2019**.

[C7] **Ahmed Taha**, Yi-Ting Chen, Xitong Yang, Teruhisa Misu, Larry Davis.
★ Exploring uncertainty in conditional multi-modal retrieval systems.
**arXiv 2019**.

[C6] **Ahmed Taha**, Pechin Lo, Junning Li, Tao Zhao.
★ Convolution Networks for Kidney Vessels Segmentation from CT-Volumes.
International Conference on Medical Image Computing and Computer-Assisted Intervention (**MICCAI2018**)

[C5] Junning Li, Pechin Lo, **Ahmed Taha**, Hang Wu, Tao Zhao.
★ Segmentation of Renal Structures for Image-Guided Surgery.
International Conference on Medical Image Computing and Computer-Assisted Intervention (**MICCAI2018**)

[C4] **Ahmed Taha**, Moustafa Meshry, Xitong Yang, Yi-Ting Chen, Davis, Larry.
★ Two Stream Self-Supervised Learning for Action Recognition
Computer Vision and Pattern Recognition Workshop (**CVPRW2018**)

[C3] Rohan Chandra, Sachin Grover, Kyungjun Lee, Moustafa Meshry, **Ahmed Taha**.
★ Texture synthesis with recurrent variational auto-encoder.
**arXiv, 2017**.

[C2] **Ahmed Taha**, Marwan Torki.
★ Seeded laplacian: An interactive image segmentation approach using eigenfunctions
IEEE International Conference on Image Processing (**ICIP2015**)

[C1] Moustafa Meshry, **Ahmed Taha**, Marwan Torki.
★ Multi-Modality Feature Transform: An Interactive Image Segmentation Approach.
The British Machine Vision Conference (**BMVC2015**)

## Research Experience

[X6] [**2021-2022 Research Scientist at WhiteRabbit.AI**] Mentor: Yen Nhi Truong Vu; Supervisor: Jason Su.

- Leverage artificial intelligence to detect early-stage cancer in mammograms.
- Develop novel architectures to process high-resolution medical images using self-attention layers with linear complexity (Performers).

- Reduce the complexity of an ensemble model by 75% (down from 20 models to 5 models) while attaining superior performance.

[X5] [**2019 Honda Research Institute Internship**] Develop an interpretable video retrieval system for road-intersections scenarios. Mentor: Yi-Ting Chen.

[X4] [**2018 sponsored by Honda Research Institute**] Explore self-supervised learning, ego-motion action embedding, conditional and Bayesian retrieval uncertainty for autonomous navigation. Mentor: Yi-Ting Chen.

[X3] [**2017 Intuitive Surgical Internship**] Develop robust algorithms to segment key anatomical structures from 3d volumetric images, in a fully automatic and semi-automatic fashion. Supervisor: Tao Zhao.

[X2] [**2016 Adobe Internship**] Develop a new selection\segmentation tool through patch matching. Supervisor: Stephen Schiller.

[X1] [2015] Develop an approached for solving interactive image segmentation problem. The approach supports different user annotation forms like scribble, trimaps, tight contour and bounding box. Advisor: Marwan Torki.

## Patents

[P4] Yi-Ting Chen, Nakul Agarwal, Behzad Dariush, **Ahmed Taha**.
System for performing intersection scenario retrieval and method thereof.
**US Patent 11,741,723, 2023**

[P3] **Ahmed Taha**, Yi-ting Chen, Teruhisa Misu, Larry Davis.
Methods and systems for visual recognition using triplet loss.
**US Patent 10,902,303, 2021**

[P2] **Ahmed Taha**, Yi-ting Chen, Teruhisa Misu, Larry Davis, Xitong Yang.
Systems for modeling uncertainty in multi-modal retrieval and methods thereof.
**US Patent 10,943,154, 2021**

[P1] Junning Li, Pechin Chien Pau Lo, **Ahmed Taha**, Tao Zhao.
Systems and methods for segmentation of anatomical structures for image-guided surgery.
**US Patent 10,885,630, 2021**

## Awards and Honors

[W9] WACV Doctoral Consortium Plus Travel Award 2020.

[W8] Outstanding Teaching Assistant Award for AY 2019-20 from the University of Maryland (Awarded to 2%).

[W7] Gifted unrestricted **2500$** from Adobe Systems, Inc.

[W6] University of Maryland Graduate School Dean's Fellowship, 2015 and 2016

[W5] Awarded **four** successive times in college for the Excellent grade.

[W4] Passing round one in **Microsoft Imagine Cup contest 2008**.

[W3] Graduate project is a winner in the **Information Technology Industry Development Agency's (ITIDA)** competition.

[W2] Team has been chosen as one of the **Young Innovators' Awards(YIA)** Program winners for the academic year 2008/2009.

[W1] Graduation project was chosen **2$^{nd}$ best graduate project** by Alexandria University for year 2008/2009.

## Press & News

[N1] M&M: Tackling False Positives in Mammography with a Multi-view and Multi-instance Learning Sparse Detector. Featured in MICCAI 2023 Magazine

## Employment

| | | | |
|---|---|---|---|
| 03.2023 | Present | **Research Scientist** | WhiteRabbit.AI |
| 10.2022 | 03.2023 | **Applied Scientist** | Amazon |
| 07.2021 | 09.2022 | **Research Scientist** | WhiteRabbit.AI |
| 2018 | 2021 | **Graduate Research Assistant** | University of Maryland |
| Summer 2019 | | **Student Associate Intern** | Honda Research Institute |
| Summer 2018 | | **Research Assistant** | University of Maryland |
| Summer 2017 | | **Medical Image / Machine Learning Intern** | Intuitive Surgical Inc |
| Summer 2016 | | **Emerging Graphics Group Intern** | Adobe Systems Inc |

2011 2019 **Co-founder** Inova LLC
Managing software projects, negotiating with prospective clients, and marketing the company's services.
Mobile Apps developed by Inova: Polar Scouts Feedbooks Free XSmoking

2010 2015 **Teaching Assistant** Faculty of Engineering, Alexandria University

2009 2010 **Software Engineer** Vimov LLC
Developing mobile apps for iOS and porting C games to iOS.
Ported Hexen II open source game from C to Objective C language to support iOS devices.

Summer 2008 **Software Development Intern** BadrIT
Developing mobile apps for iOS.

Summer 2007 **Software Development Intern** EasyDialog
Building website based on Enhydra server using JSP and servlet pages.

## Service

1. Conference Reviewer: AAAI 2022, CVPR 2022, AAAI 2023, CVPR 2023, AAAI 2024.

## Teaching

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|---|---|
| Teaching Assistant | University of Maryland (7 Semesters) |
| | CMSC132 (Object-Oriented Programming II - Using JAVA) |
| | CMSC216 (Introduction to Computer Systems - Using C) |
| | CMSC420 (Data Structures - Using JAVA) |
| | CMSC426 (Computer Vision - Using PYTHON) |

Languages: Arabic (Native Language), and English (Very Good)