

Ariyan Zarei

PhD Student

Department of Computer Science
University of Arizona
Tucson, Arizona

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EDUCATION

Ph.D., Computer Science

University of Arizona, Tucson, AZ

THESIS: TBD

GPA 3.80

August 2018 – Present

MS., Computer Science

University of Arizona, Tucson, AZ

GPA 3.80

August 2018 – December 2020

B.Sc., Computer Science

Shahid Beheshti University, Tehran, Iran

GPA 3.92

August 2013 – April 2018

PROFESSIONAL EXPERIENCE

Machine Learning Software Engineer Intern

Meta

Menlo Park, CA

May 2022 – August 2022

Graduate Research Assistant

Department of Computer Science

Interdisciplinary Visual Intelligence Lab (IVILAB)

University of Arizona, Tucson, AZ

January 2019 – Present

- Developed an efficient and scalable geo-correction and image stitching method (MegaStitch) for orthomosaicing agricultural images in order to estimate the relations between plant genotypes and phenotypes. **(Joint with Phytooracle team and Cyverse)**
- Developed MegaStitch3D for geo-correcting 3D point clouds. **(Joint with Phytooracle team and Cyverse)**
- Developed End-to-End Deep Instance Segmentation Model (SorghumPartNet) for segmenting 3D point clouds of sorghum leaves. **(Joint with Phytooracle team and Cyverse)**
- Designed and developed Neural Networks for estimating precipitation patterns on Spatio-Temporal data using the IMERG product.
- Designed and developed Neural Networks for classification and segmentation of breast cancer in Whole Slide Images (WSI) of breast tissue.
- Collected and annotated an image dataset and developed Neural Network models to detect and segment charcoal dry rot disease on sorghum plants. **(Joint with Phytooracle team and Cyverse)**

IT Intern

June 2021 – Present

NP Photonics Inc.
Tucson, AZ

- Designed and developed a network-based windows application for data management and analysis on the experiments conducted by the R&D team using Python QT and Microsoft SQL Server.
- Designed and developed an IT Help Desk Ticketing System using Microsoft-Office 365 applications (SharePoint, Power Apps, and Power Automate).
- Designed and developed a Learning Management System (LMS) for the employee training using Microsoft-Office 365 applications (SharePoint, Power Apps, and Power Automate).
- Designed and developed an application for Customer Order Entry Request using Microsoft Office 365 applications.
- Designed and developed an application for Internal Purchase Order Requests using Microsoft Office 365 applications.
- Designed and developed an application for Part No Change Requests using Microsoft Office 365 applications.
- Deployed, Maintained and Managed the local network using Windows Server and Active Directory.

Graduate Teaching Assistant

CSC 452 – Principles of Operating Systems
CSC 452 – Principles of Operating Systems

Fall 2018
Spring 2019

Undergraduate Research Assistant

Department of Computer Science
Joint with Cognitive Science Research Center
Shahid Beheshti University, Tehran, Iran

January 2016 – December 2017

- Developed a Gesture Recognition software using Microsoft Kinect to assist treating patients with neurodevelopmental disorders, such as autism and hyperactivity.
- Designed and developed Neural Networks to track motorcycles and detect drivers who are not wearing helmet.

Undergraduate Teaching Assistant

Data Structures and Algorithm Design

Fall 2016

PUBLICATIONS

- Ehsani, Mohammad Reza, Ariyan Zarei, Hoshin V. Gupta, Kobus Barnard, and Ali Behrangi. "Nowcasting-Nets: Deep Neural Network Structures for Precipitation Nowcasting Using IMERG." arXiv preprint arXiv:2108.06868 (2021). (Under Review at TGRS)
- Zarei, Ariyan, Emmanuel Gonzalez, Nirav Merchant, Duke Pauli, Eric Lyons, and Kobus Barnard. "MegaStitch: Robust Large Scale Image Stitching." (2021). (Published in IEEE TGRS)
- Zarei, Ariyan, and Arman Yousefzadeh Shooshtari. "A Feature Vector for Optical Character Recognition." In Proceedings of the 2018 International Conference on Information Science and System, pp. 133-136. 2018.
- Zarei, Ariyan. "Improve CAPTCHA's Security Using Gaussian Blur Filter." Signal and Image Processing 5, no. 5 (2014): 35.
- Zarei, Ariyan. "The Effect of Applying Gaussina Blur Filter On CAPTCHA's Security."

- Zarei, Ariyan. "Computer Controlling System Using Text Messages", International Conference On Computers, Information Technologies and Digital Medias (CITADIM 2013), Tehran, Iran, Mar. 2013. (Technical Report)

TALKS

- ***AG2PI Workshop*** Feb. 28 2022
Hands-On Machine Learning with Agricultural Applications
- ***Cyverse Webinar*** Apr. 16 2021
Managing the Machine Learning Lifecycle with MLFlow: A Demonstration Using PhytoOracle
- ***AG2PI Field Day Seminar*** Dec. 16 2020
PhytoOracle: A Case Study in Big Data Phenomics
- ***Tripods Seminar*** Dec. 04 2020
PhytoOracle: Transforming the Way We See Plants
- ***Cyverse Webinar*** Nov. 20 2020
PhytoOracle: Leveraging CyVerse, Containers, and Open-Source Tools for Phenomic Data Processing at Scale

REVIEWER FOR JOURNALS AND CONFERENCES

- ELCVIA: Electronic Letters on Computer Vision and Image Analysis
- SoftwareX

RESEARCH INTERESTS

- Deep Neural Networks
- Computer Vision
- Image Registration and Stitching
- 3D Structure Reconstruction
- 3D Point Clouds
- Remote Sensing and Atmospheric Science
- Biomedical Image Analysis
- Probabilistic Graphical Models

MEMBERSHIPS

- Current president and former member of the Iranian Students' Cultural Association in Tucson (ICAT)
- Former president of the Scientific Association Of Computer Science Students at Shahid Beheshti University
- Former member of Iran's Society of Image Processing and Computer Vision
- Former member of Youth Researchers and Elite Club, Islamic Azad University
- Former member of the editorial board of "Pardazeh", The Scientific Journal of Computer Science Student Association at Shahid Beheshti University

AWARDS AND HONORS

- Received the Tech Lunch Arizona (TLA) award for design and development of a gardening mobile application.
- Received Spring 2021 Roots for Resilience Program Scholarship.
- Attended the training camp of the 43rd World Skills Competition.
- Ranked third and achieved bronze medal in the 14th National Skills Competition in the "IT-Software Solution for Business" field.

- Ranked fifth and achieved honoring diploma in the 13th National Skills Competition in “IT-Software Solution for Business” field.
- Ranked first in the ”Gomanesh” AI/NLP competition, a 20-question competition between computer robots on Telegram, held by Department of Computer Science at Shahid Beheshti University.
- Chosen project in the provincial level of the 14th Youth Khwarizmi Competition and acceded to the national level.

CERTIFICATS

- Windows Form Application Development with C#.Net , Tehran Institute of technology.
- Database Design and Development with SQL Server, Tehran Institute of technology.
- ADO.Net and Entity Framework with C#.Net, Tehran Institute of technology
- Fundamental of programming with C#.Net, Tehran Institute of technology
- Game Programming using XNA and C#, Coursera

SKILLS AND PROGRAMMING LANGUAGES

- | | | |
|-------------------------|-----------------------|----------------------------|
| • Keras and Tensorflow | • Docker, Singularity | • R |
| • Pytorch | • Java | • Microsoft SharePoint |
| • OpenCV | • C# | • Microsoft Power Apps |
| • Python | • C and C++ | • Microsoft Power Automate |
| • Django REST Framework | • SQL Server | |
| • React Native | • Matlab | |

LANGUAGE SKILLS

- Persian (Native)
- English
 - TOEFL ibt: Total: **110** (Reading: **30**, Listening: **29**, Speaking: **26**, Writing: **25**)
 - GRE General: (Verbal Reasoning: **155**, Quantitative: **165**, Analytical Writing: **3.5**)

REFERENCES

- Kobus Barnard, Professor of Computer Science at the University of Arizona
<http://kobus.ca>
- Eric Lyons, Assistant Professor of Plant Science at the University of Arizona
<https://cals.arizona.edu/spls/content/eric>
- Duke Pauli, Assistant Professor of Plant Science at the University of Arizona
<https://cals.arizona.edu/spls/content/duke>
- Ali Katanfroush, Assistant Professor of Computer Science at Shahid Beheshti University
<http://facultymembers.sbu.ac.ir/katanfroush>
- Alireza Tavakoli, Former Assistant Professor of Computer Science at Shahid Beheshti University
alireza.tavakoli@gmail.com