Abdullah Ahmad Zarir

zargit.github.io | abdullahzarir@gmail.com

Research Interests

Artificial Intelligence, Machine Learning, Deep Learning, Generative Models, Computer Vision, Natural Language Processing, Interpretability, Autonomous Driving

Education

Fall 2013 – Winter 2018 **BSc in Computer Science** | *International Islamic University, Malaysia (IIUM).*
Major GPA 3.92/4.0
Overall 3.75/4.0

Publications

2018 Amri, A. A. and Ismail, A. R. and Zarir, A. A. (2018). Comparative Performance of Deep Learning and Machine Learning Algorithms on Imbalanced Handwritten Data. *International Journal of Advanced Computer Science and Applications*, *Vol. 9. No. 2.*

2017 Amri, A. A. and Ismail, A. R. and Zarir, A. A. (2017). Convolutional Neural Networks and Deep Belief Networks for Analyzing Imbalanced Class Issue in Handwritten Dataset. *International Journal on Advanced Science, Engineering and Information Technology, Vol. 7. No. 6.*

2016 Diallo, L., Hashim, A. H. A., Olanrewaju, R. F., Islam, S., & Zarir, A. A. (2016). Two objectives big data task scheduling using swarm intelligence in cloud computing. *Indian Journal of Science and Technology*, *9*(28).

Conference Presentations

2017 Farooq, A., Mohammad, E., Zarir, A. A. and Ismail, A. R. (2017, November). *Real Time Human Action Recognition using Stacked Sparse Autoencoders.* Presented at the International Conference on Information Technology and Multimedia, Universiti Tenaga Nasional, Malaysia.

Internships

June 2017 – March 2018 **Quintiq, *a Dassault Systèmes company*** | *Kuala Lumpur, Malaysia*
Software Engineering Intern, SQC

Contributed to making an automated testing framework for the company's hybrid mobile application as part of the Quintiq Mobile Client team. The framework library is written in python using Selenium and Appium automation library.

Research Assistant, Department of Computer Science, IIUM

Fall 2016 – Winter 2017 **Automated Image Captioning with Deep Neural Networks** with Associate Prof Dr. Amelia Ritahani Ismail
Implemented a caption generation model inspired by the language translation model, based on transfer learning using Google's Inception v3, retrained the last layer. It follows the Show & Tell method, using a CNN for encoding image and RNN for decoding into text.

Summer 2016 **A low hop distance hierarchical interconnection network** with Assistant Prof Dr. M. Hafizur Rahman
Coded and analyzed a simulation of the proposed hierarchical interconnection network using graph traversal methods in C++.

Winter 2016 **Comparative Performance of Deep Learning and Machine Learning Algorithms on Imbalanced Handwritten Data** with Associate Prof Dr. Amelia Ritahani Ismail
Implemented neural network based prediction models and analyzed their performance by generating imbalanced dataset of handwritten digits.

Winter 2016 **Software Requirement Extraction from Use Case Descriptions using Natural Language Processing** with Assistant Prof Dr. Azlin Binti Nordin
Assisted in finding appropriate natural language rules for extracting requirements from client provided use case descriptions through running simulations using Natural Language Processing tools.

Teaching Assistant, Department of Computer Science, IIUM

Winter 2017 **CSC 3402 | Computer Architecture & Assembly Language**
Conducted 1 weekly tutorial class for 2 hours, demonstrating the use of Logisim simulator to ultimately design a 32 bit ISA that can execute MIPS code and how to code in Assembly Language using the MARS compiler. Helped lecturer in preparing and grading question sets for lab quizzes and assignments. The class consisted of 50-60 students.

Fall 2016, Winter 2017 **CSC 2101 | Data Structures & Algorithms**
Conducted 2 weekly tutorial classes for 2 hours each, demonstrating implementation of basic data structure such as Arrays, Lists, Graphs, Trees, Hash Tables etc. in C++. Helped in setting up online quizzes and grading. Each class consisted of 30-40 students.

Winter 2016 **CSC 2103 | Web Programming**
Conducted 1 weekly tutorial class for 2 hours, demonstrating implementation of server side web application using Java Servlets and assisting students in their term project. The class consisted of 10-15 students.

Winter 2015, 2016 **CSC 3100 | Principles of Artificial Intelligence**
Conducted 1 weekly tutorial class for 2 hours, demonstrating implementation of various AI concepts in multiple languages such as Prolog, Lisp and Python. The class consisted of 15-20 students.

Winter, Fall 2015 **CSC 2705 | Calculus II & Linear Algebra**
Conducted 1 weekly tutorial class for 2 hours, reviewing the theories from class and assisting in solving practice exercises. The class consisted of 25-30 students.

Winter, Fall 2014 **CSC 1100 | Elements of Programming**
Conducted 2 weekly tutorial classes for 2 hours each, demonstrating implementation of basic coding constructs in C++. Each class consisted of 30-40 students.

Selected Projects

2017 **Automated Image Captioning in Android**
Designed a cloud based model for easily generating captions for image taken by an android device on the run. The prediction model after training was hosted in a DigitalOcean droplet. Picture taken by the app would update Google Firebase database and then it would notify the NodeJS server in the droplet. Another Python server running in parallel takes the new image and generates captions using the trained prediction model written using TensorFlow which returns the caption with max probability. Once the Firebase database is updated with the caption, it is broadcast back to the user.

2016 **Human Motion Learning**
Encoded a short clip of human motion into a static image consisting of the temporal difference in frames also known as MHI. Dataset included 6 different type of motions. These images were used as input to a stacked autoencoder to extract features. Extracted features were then used to train a softmax classifier for prediction.

2015 **Faulty Pill Detection in Medicine Strip**
Trained a neural net which can detect a medicine strip in a running conveyor belt and then can further detect if any pill in the medicine strip is faulty. OpenCV was used to isolate the medicine strip in the image after detection, following that the image was striped into single pills. The single pill images were used as the training data. The prediction model could identify exactly which pills were faulty in the packaging by numbering them in order.

Awards & Scholarships

2013-2017 **Dean's List** | *Department of Computer Science, IIUM*
Six Semesters

2017 **ACM ICPC Asia** | *Thailand Regional*
Honorable Mention (23rd ranking out of 74 teams) – Team WF_please

This is the penultimate round before the world final. A total of 74 teams participated in the contest in Mahidol University. The best teams from 14 different countries including Singapore, China, Indonesia, South Korea, Vietnam and Japan participated. We were the only team representing Malaysia.

2017 **Unicode Programming Competition** | *Monash University & School of UOW in INTI*
Champion – Team Zeroth

More than 50 teams from various universities participated. The contest had 3 rounds, 3 hours each, with increasing difficulty.

2016 **ACM ICPC Malaysia** | *Al Khawarizmi National Programming Competition*
First Runner Up – Team WilderCodes

A yearly competition between all the universities in Malaysia. Where the best competitive programming teams participate.

2016 **Open Programming Competition** | *USIM*
Champion – Team MasterMinds

Around 30 teams participated from various universities. The contest was 5 hours long consisting of 9 problems.

2015 **ACM ICPC Asia** | *Singapore Regional*
Honorable Mention – Team MasterMinds

This is the penultimate round before the world final. This regional was declared the mini world final based on its contenders and the difficulty of the problem set. A total of 60 teams were selected from the preliminary round for the onsite contest in NUS. The best teams from 11 different countries including China, Taiwan, Korea, Vietnam and India participated.

2015 **Freescale Cup** | *Intelligent Car Racing*
Second Runner Up – Team IIUM A

The objective of the contest was to make a fast lane following car using a line scan camera. There were 60 teams in the competition. Video link: *https://www.youtube.com/watch?v=RCqpODranwg*

2014 **ACM ICPC Asia** | *Kuala Lumpur Regional*
Honorable Mention – Team Void

2014 **ACM ICPC Malaysia** | *Al Khawarizmi National Programming Competition*
Fourth Place – Team Void

2014 **Academic Excellence Award** | *International Islamic University, Malaysia*
Full-term Undergraduate Scholarship

2012 **ACM ICPC Asia** | *Dhaka Regional*
Honorable Mention – Team Origin

Technical Skills

Languages	C/C++, Python, Java, JavaScript, PHP, Assembly (MIPS)
Frameworks & Libraries	TensorFlow, Scikit-Learn, NLTK, Flask, Android, NodeJS, jQuery, Laravel
Deployment	Git, Docker
OS	Unix, Mac, Windows

Extra-curricular Activities

2016 - Present Founding member of **codeknights.org**
An online programming competition platform curated for undergraduate students in Malaysia

2015-2017 **IIUM Code Jam** | *Programming Contest in ACM ICPC format*
Organizer (2015, 2016), Problem Setter & Judge

2011 - 2013 **Executive Officer (Logistics)** | *CommunityAction (ca-bd.org)*
Award winning student run volunteer organization in Bangladesh

2012 **Youth Leadership Summit** | *BYLC*
Delegate

2012 **TedxDhaka**
Volunteer, Organizing Committee

Others

Citizenship Bangladeshi

Referees

Dr. Imad Fakhri Taha Alyaseen
Professor of Computer Science
Kulliyyah of ICT, IIUM
imadf@iium.edu.my

Dr. Normaziah Binti Abdul Aziz
Associate Professor of Computer Science
Kulliyyah of ICT, IIUM
naa@iium.edu.my

Dr. Amelia Ritahani Ismail
Associate Professor of Computer Science
Kulliyyah of ICT, IIUM
amelia@iium.edu.my