

# Mahdi Kazemi Moghaddam

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## Education

### Doctorate of Philosophy in Mathematics and Computer Science

Aug 2019 - Now

The University of Adelaide, Australian Institute for Machine Learning

Thesis Title: Visual Navigation for Embodied Autonomous Agents

Principal Supervisor: Prof. Javen Qinfeng Shi

### Honours Degree of B. Computer Science (First Class Honours)

Jul 2018 - Jul 2019

The University of Adelaide, Australian Institute for Machine Learning

Thesis Title: Human Behaviour Understanding in Shopping Environment from Videos

- Proposed a method that achieved state-of-the-art results on MERL dataset, 2019
- Proposed the second video activity detection for shopping dataset in the world

### Bachelor of Electronic Engineering (Honours)

Oct 2009 - Oct 2015

Amirkabir University of Technology (**second best** university in Iran, ranked **17 globally** for faculty citations)

Thesis Title: Design, Simulation and Implementation of a Multi-Channel Industrial RTD-Based Distributed Temperature Measurement System

## Professional Activities

### Master of Data Science Supervisor

Jul 2020 - Now

The University of Adelaide; Adelaide, Australia

Supervising (and co-supervising) three master's students on computer vision/ machine learning projects.

### Teaching Assistant

Jul 2020 - Dec 2020

The University of Adelaide; Adelaide, Australia

Delivered lectures, tutorials, and assignment/ exam markings for two courses: Deep Learning Fundamentals and Applied Machine Learning.

### Research Assistant

Jan 2019 - Now

The University of Adelaide, Australian Institute for Machine Learning; Adelaide, Australia

Developed and maintained industry collaboration on AI driven projects in sports performance analysis, mineral exploration, factory management systems among others.

### Systems Development and Test Engineer

Jun 2011 – Dec 2017

Department of Information and Communication Technology, Hekmat Iranian Bank; Tehran, Iran

Developed and tested pilot versions of key bank services including debit card issuer system, internet banking, virtual teller machines among others.

**Research Engineer Intern**

Jun 2013 – Oct 2013

Iran Aviation Industries Organisation; Tehran, Iran

Researched and developed solutions to convert different analogue airplane control units to digital.

**Electronic Banking Engineer Intern**

Jun 2011 – Jan 2012

Department of Information and Communication Technology, Hekmat Iranian Bank; Tehran, Iran

Researched and developed new internet banking solutions to improve customer satisfaction.

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**Awards and Honours**


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<b>1<sup>st</sup> Place, Robotic Challenge, Australian Center for Robotic Vision</b>	Nov 2020
<b>Bushfire Data Quest Challenge Finalist</b>	Aug 2020
<b>Gawler Challenge, Merit Award</b>	Jul 2020
<b>Faculty Dean's Academic Excellence Award</b>	Feb 2020
<b>Golden Prize, VW Logistics Innovation Day</b>	Oct 2019
<b>Govhack 2019 Hackathon Challenge Winner</b>	Sep 2019
<b>Golden Key International Honour Society (membership offer)</b>	Sep 2019
<b>Adelaide Graduate Research Scholarship (Ph.D, full-fund)</b>	Jul 2019
<b>Valedictorian of Class 2019</b>	Jul 2019
<b>IMT-Atlantique Travel Grant, Brittany, France</b>	Jul 2019
<b>Adelaide Summer Research Scholarship</b>	Nov 2018
<b>Graduate Record Examination (GRE) (scored 314.5)</b>	Nov 2016
<b>Iranian National University Entrance Exam (Konkour)</b>	Jun 2009
Placed <b>915<sup>th</sup></b> among more than <b>270,000</b> candidates nation-wide, ranked first at school.	

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**Recent Publications**

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- Moghaddam**, Mahdi, et.al. "Learning for Visual Navigation by Imagining the Success." (2020). (under review).
- Moghaddam**, M., et al. "Optimistic Agent: Accurate Graph-Based Value Estimation for More Successful Visual Navigation" *arXiv preprint arXiv:2004.03222* (2020). (Accepted at WACV 2021)
- Moghaddam**, Mohammad Mahdi Kazemi, Ehsan Abbasnejad, and Javen Shi. "Follow the Attention: Combining Partial Pose and Object Motion for Fine-Grained Action Detection." *arXiv preprint arXiv:1905.04430* (2019).

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**Selected Projects**
**Autonomous Vineyard Management Robot**

Jan 2020 - Jul 2020

As part of a project collaborating with Wine Australia and Riverland Wine, I developed a robot able to autonomously navigate in the vineyards and collect visual and other sensory information that can be used to predict the yield at different stages of the wine grape's life. (video demo at: <https://youtu.be/-YKG-zzyA4o>)

**AI for Table Tennis Match Analysis**

Feb 2020 - Nov 2020

In an industry project in collaboration with Table Tennis Australia, I developed a state-of-the-art automated match analysis system using AI, machine learning and computer vision. (video demo at: <https://youtu.be/IL5Jqsg6UUE>)

**AI for Wheelchair Rugby Match Analysis**

Aug 2019 - Nov 2019

In an industry project in collaboration with Victorian Institute of Sport, I developed a pilot match analysis tool performing player detection, tracking and 2D localisation using computer vision and machine learning techniques. The impressive delivery of the pilot project led to further collaboration with Table Tennis Australia.

**AI for Mineral Exploration**

Mar 2020 - Jul 2020

As a member of DeepSightX team, I developed a few different machine learning methods that automate the bedrock geology prediction process. The developed methods can fast-track mineral exploration by a significant margin. DeepSightX's overall submission to Gawler Challenge won a merit award and was titled "the most innovative approach to exploration" by the judging panel. (more details at: <https://bit.ly/33zeuhP> )

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## Language and Technical Skills

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**Spoken Languages**

English (IELTS 8 overall) and Persian (native)

**Programming languages**

C++, JAVA, Python

**Machine Learning and Computer Vision**

Experienced in PyTorch and Tensorflow frameworks for deep learning, experienced in various reinforcement learning simulators like Deepmind Lab, VizDoom, Gazebo etc. as well as navigation-specific ones like Gibson, AI2THOR among others.

**Data mining**

Experienced in using Hadoop distributed file system

**Embedded system design and development**

Experienced in embedded development application like IAR, Keil, CodeVision (AVR and ARM micro-controllers)

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## Additional Activities

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**Early Career Researcher Committee, Australian Institute for Machine Learning**

In the committee I help planning and organising events that helps researchers better find their future path.

**Adelaide University Open Day**

I represented the university's latest achievements to attract new bright minds.

**3<sup>rd</sup> National Khwarizmi Robotic Competitions Executive Committee, Amirkabir University of Technology**

I helped organise the event that attracted the best robotic teams from the country.

**2<sup>nd</sup> Amirkabir University of Technology Robotic Competitions International Affairs Committee**

I planned and organised arrangements for the international participants from across the world to enter the competitions held in Iran.

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## References

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**Academic and industry references are available upon request.**