

# SAMI ARJA

Software Engineer   Research Assistant   ML Developer

☎ 0424403034

✉ sami.arja@gmail.com

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## EDUCATION

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**Bachelor of Engineering in Robotics and Mechatronics (Honours)**

February 2015 - June 2019

Western Sydney University, Kingswood

Minor in Computer Aided Design and Biomedical Engineering

**Diploma of Engineering** 🎓

February 2014 - December 2015

Western Sydney University, Nirimba

## SKILLS AND INTERESTS

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<b>Interests</b>	Machine Learning, Computer vision, Electronics Systems, Biomedical Devices, Neural Networks, Statistics, Data science, Cloud engineering, Robotics, 3D Modeling and Simulation
<b>Software</b>	Python, C/C++, SQL, Matlab, Solidworks, SW Visualizer, ROS, Altium Designer, Jupyter Lab, AWS, MS-excel, Google Documents and L <sup>A</sup> T <sub>E</sub> X

## EXPERIENCE

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**Software Engineer Intern**

May 2019 - Present

🏢 *Nautitech Mining Systems Pty Ltd*

- Linux based web and desktop application development with C# for Thermal Cameras.
- Database design and development using MS SQL Server.
- Application development for mobile devices on Android, and IOS.
- Video application development using raw and compressed video protocols such as H.264 and GIGe.
- Application development using OpenCV and other computer vision framework.

**Lab Assistant - Electrical and Electronics**

February 2019 - Present

🏢 *Western Sydney University, Engineering & Industrial Design Cluster*

- Assist technical officers across the electrical, electronics, Mechatronics & Mechanical team.
- Assist in lab preparation for classes, basic maintenance duties, moving and managing equipment's.
- Supporting students in running undergrad lab equipment's.

**Undergraduate Research Scholar**

November 2018 - May 2019

🏢 *The MARCS Institute Brain, Behavior and Development*

- Project: Characterisation of morphic sensors for body volume applications.
- Supervisors: Dr. Gaetano Garguilo and Dr. Paul Breen.
- Characterizations of electro-resistive fabrics band to be used in measuring human blood and respiration rate.
- Implement an accurate data acquisition system on the CC2460R2 module which helps in recognizing patterns for each band during testing.
- Using C and Matlab to support the data acquisition, Data analysis and Data visualization.
- 3D modelling an optimized version of the expansion/contraction machine.
- Paper Title: "Characterization of Morp hic Sensors for body volume and shape applications".

**Research Assistant**

May 2018 - Present


🏢 *CSIRO's Data61*

- Conduct an online research analysis to understand more about business.
- Review, edit and enter data about Australian businesses providing Environmental Goods and Services.
- Classify these Data into specific categories, for further analysis.

- Use Pandas and Numpy to merge old and new data effectively without losing any entry and perform Data cleaning and Data Munging.
- Update data already collected against primary sources, as well as identifying and recording data about other relevant organizations.

### **Robotics Class Instructor**


May 2018 - Present

 *RobotZilla - Baulkhaum Hill Public School*

- Teach kids the principle of coding on Scratch Junior - MIT App Inventor, as well as web development on Python - HTML - CSS - JavaScript.
- Help Kids to build and program their own Lego Robot.
- Design robotics kit to support the annual curriculum, such as Robotics arm, quadruped robot and Robotics arm.
- Platforms used are Scratch, MIT App Inventor, Arduino and Lego Mindstorm.

### **Robotics Engineer Intern**


October 2017 - January 2018

 *Lab38 - Western Sydney University*

- Design a CNC drawing machine using mechanical linear rail to support a frictionless movement.
- Program the electrical system of the machine to convert any input (image, text) to G-code.
- Laser cut all parts and components using Corel software, and Solidworks as main program for 3D modelling.

### **Electronics Engineer Intern**

December 2017 - March 2018

 *Mostyn Enterprises*

- Design Circuit boards on Altium Designer.
- Generate BOM for each board.
- Design RF(Radio Frequency) Loop Antenna & bias tee.

## **PROJECTS**

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### **Deep Convolutional Neural Network for Spatial and Temporal Human Action Recognition**

August 2018 - Present

*Thesis - Honour project*

- Develop a software to extract spatial and temporal features from trimmed video on KTH datasets.
- Build 2 neural network architecture and compare their performance against the state of the art benchmark results.

### **Fully Autonomous Mobile Robotics system based on Neural Network**

August 2018 - Present

*Major final year Capstone project*

- Model a mobile robot platform that run on raspberry pi and arduino uno and hokuyo Lidar.
- Develop a software based on convolutional neural network architecture that detect and recognize traffic light and objects in real time.

### **RobotCup SSL(Small size League)**

November 2017

*Western Sydney University Unlimited Robotics*

- Design and build a robotics soccer team consists of 11 mobile robots.
- Use industrial camera to detect each robot pattern and teach the robot to play as team.

### **NI (National Instruments) Autonomous Robotics Competition**

December 2017 September 2018

*Western Sydney University Unlimited Robotics*

- Integrate sensors and actuators into a smart mechatronic system.
- Develop an algorithm to perform image processing and motion planning
- Develop navigation and mapping algorithm navigation through tracking features or landmarks within the track.

## **POSITION OF RESPONSIBILITY**

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## **Baxter Robot Operator**

February 2018 - Present

*The LaunchPad*

- Operate and present Baxter Robot in various event: CatalystWest, Semi-permenant, CeBIT.

## **Engineer Team Member**

August 2017 - Present

*Robotics Club - Western Sydney University*

- Lead in Mechanical work of Robotics club, working mostly with CAD and Hardware systems.
- Active member working to develop various robots of different concepts and configurations.

## **ACHIEVEMENTS**

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- 🏆 Top 5 at **NIARC 2018** under the supervision of Dr Gu Fang. March 2018
- 🏆 Top 25% at **Santander Value Prediction Challenge**, a Machine Learning competition hosted by **Kaggle**. May 2018
- Leading workshop on **Introduction to Robotics and Lego Mindstorm**.  
at Western Sydney University October 2018