

# Curriculum Vitae

## Personal Details

Name : **Kamarulzaman Kamarudin**  
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Organization : Faculty of Electrical Engineering Technology,  
Universiti Malaysia Perlis (UniMAP),  
Kampus Ulu Pauh, 02600  
Arau, Perlis, Malaysia



Positions : Deputy Dean Industrial Networking & Quality Management  
Senior Lecturer



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SCAN ME

## Education Background

### Universiti Malaysia Perlis (UniMAP)

Nov. 2011 - May 2016

### Ph.D in Mechatronics Engineering

(Scholarship: SLAB/SLAI )

Thesis title: "An Improved Mobile Robot Based Gas Source Localization with Temperature and Humidity Compensation via SLAM and Gas Distribution Mapping"

### University of Canterbury, New Zealand

Feb. 2007 - Apr. 2011

### B.Eng (Hons) in Mechatronics Engineering

(Scholarship: MARA's Excellent Student Scheme)

2<sup>nd</sup> Class Upper

Final Year Project: "Development of an Automated Machine to Characterise Superconductor Cable and Identify Defect Sections along the Cable"

(sponsored by company & worth more than NZD50,000)

### Mara College Seremban

July 2005 - Dec. 2006

### Cambridge A Levels

Grade: 3A (Mathematics, Physics, Chemistry)

### Dato' Abdul Razak School (SDAR)

Jan 2000 - Dec 2004

### Malaysia Certificate of Education (SPM)

Grade: 9A1, 1B3

## Employment History

May 2016 – Present

### Senior Lecturer/Researcher

Universiti Malaysia Perlis

Nov 2011 – May 2016

### Fellow/Researcher

Universiti Malaysia Perlis

Nov. 2010 – Apr. 2011

### Software Engineer

Industrial Research Ltd/Callaghan Innovation, New Zealand

## Administration

Sept 2020 – Present	<b>Deputy Dean (Industrial Networking &amp; Quality Management)</b> Faculty of Electrical Engineering Technology (FTKE), Universiti Malaysia Perlis
May 2016 – Present	<b>Head of Division (Robotic and Automation)</b> Center of Excellence for Advanced Sensor Technology (CEASTech), Universiti Malaysia Perlis
Mar 2019 – Sept 2020	<b>Coordinator Industrial Networking &amp; Quality Management</b> School of Mechatronic Engineering, Universiti Malaysia Perlis
Aug 2016 – Feb 2019	<b>Vice Coordinator Industrial Networking &amp; Quality Management</b> School of Mechatronic Engineering, Universiti Malaysia Perlis
Feb 2018 – Feb 2019	<b>Coordinator of Industrial Training</b> School of Mechatronic Engineering, Universiti Malaysia Perlis

## Teaching Experience

ENT 650	<b>Research Methodology (Postgraduate)</b>
ENT 186	<b>Computer Aided Drawing</b>
ENT 366	<b>Machine Vision</b>
ENT 373	<b>Embedded System Design and Applications</b>
ENT 289	<b>Drives and Power Electronics</b>
ENT 476	<b>Mechatronics System Design II</b>

## Teaching Modules Developed

Robot Operating System (ROS) Training Module	2018
Learn & Play With Lego Robotics Teaching Module	2017
Computer Aided Drawing Lab Modules	2017
LabVIEW Basic Workshop Module	2018

## Postgraduate Supervision

### **Graduated:**

Name: **Abdulnasser Nabil Abdullah**

Title: Modelling the Response of Different Gas Sensors in Varying Ambient Temperature and Humidity

Level: MSc (Research)

Role: Main Supervisor

Name: **Puveneswari Shunmugam**

Title: Face Recognition Based on Convolution Neural Network Method

Level: MSc (Research)

Role: Main Supervisor

## **Ongoing:**

Name: **Ahmad Zaffry Hadi Mohd Juffry**

Title: Gas Source Localization through Temperature Humidity Compensated SLAM-GDM

Level: PhD

Role: Main Supervisor

Name: **Abdulnasser Nabil Abdullah**

Title: Deep Learning Algorithm for Identification of Atmospheric Hazard in Confined Space with Temperature and Humidity Information

Level: PhD

Role: Main Supervisor

Name: **Ahmad Firdaus Ahmad Zaidi**

Title: Improving Torque and Ripple Using Predictive Torque Control for Variable Speed Drive of AC Induction Motor

Level: PhD

Role: Co-Supervisor

Name: **Ram Kumar A/L Thirumugam**

Title: 2D UWB Characterization for Localization and Tracking Using Deep Learning for High Accuracy Localization

Level: MSc (Research)

Role: Co-Supervisor

Name: **Wan Abdul Syaqr Norzam**

Title: Mobile Robot based Gas Distribution Mapping using MIP Sensor

Level: MSc (Ongoing) at Uni. Teknologi Petronas

Role: Co-Supervisor

## **Recognition, Awards & Scholarships**

Certified Train The Trainer (TTT), National Competency Standard (NCS)	2021
Anugerah Saintis Muda UniMAP	2019
Anugerah Perkhidmatan Cemerlang (APC)	2018
Certified LabVIEW Associate Developer (CLAD)	2018
Research Excellence Award, UniMAP	2016
Impact Journal Excellence Award, UniMAP	2016
Certified LabVIEW Associate Developer (CLAD)	2012
Summer Scholarship (University of Canterbury)	2010
Summer Scholarship (University of Canterbury)	2009
Excellent Student Scheme Scholarship (MARA) (for Bachelor Degree in Uni. of Canterbury, New Zealand)	2007-2011
MARA Excellent Academic Award IPMa	2008

## Technical Skills

- Robotics & System Integration
- LabVIEW
- Robot Operating System (ROS)
- MATLAB
- C, C++, JAVA, LINUX

## Research Interests

- SolidWorks/ AutoCAD/Inventor
- Mobile Robot Olfaction
- Localization, Mapping, Navigation & Path planning
- Gas Sensing & Sensor Technologies
- Internet of Thing (IoT) & Web-based applications
- Machine Learning and Deep Learning
- Image and 3D Point Cloud Processing

## Membership of Professional Bodies

- Graduate Engineer - Board of Engineers Malaysia (BEM), 2012
- Graduate Technologist – Malaysia Board of Technologist (MBOT), 2017
- Student Member - Institute of Electrical and Electronics Engineers (IEEE), 2013
- Member - International Society for Olfaction and Chemical Sensing (ISOCS), 2012-2013

## Speaker, Consultation & Exhibitor

<b>Speaker</b>	Talk on "Mobile Robot Olfaction" in RARCCN-2021, Sri Ramakrishna Institute of Technology (SRIT) India	2021
<b>Speaker</b>	Lecture on "Advances in Robotics" at Sri Ramakrishna Institute of Technology (SRIT) India	2021
<b>Speaker</b>	Talk on "Think Like an Engineer" at Sri Ramakrishna Institute of Technology (SRIT) India	2020
<b>Consultant</b>	PGMEDIC Sdn Bhd: Design And Development Of Fully Integrated IR4.0 Manufacturing Line For Blades	2020-Present
<b>Consultant</b>	Eeway Precision Machining Sdn Bhd: Automation and Machining	2020-Present
<b>Consultant &amp; Industrial Attachment</b>	Walta Engineering Sdn Bhd: Waterjet Peeling Machine. Securing Donation of Industrial Scara Robot for Research and Education Purposes (RM400,000)	2017-Present
<b>Speaker/Trainer</b>	2-Days International Hands on Workshop/Training on Expanding Prospects with ROS and IOT for Cloud Robotics, Sri Ramakrishna Institute of Technology (SRIT) India, 2019	2019

<b>Technical Advisor</b>	Enter Corridor Training Center - Diploma Program for Mechatronic Technology (Robotic)	2019-Present
<b>Consultant</b>	Robot Operating System (ROS) and Implementation, Mechatronics Laboratory, MIE University, Japan	2017
<b>Invited Speaker</b>	Postgraduate Seminar on Robotics and Artificial Intelligent (2017), Prince Songkhla University (PSU), Thailand	2017
<b>Head Trainer/Speaker</b>	Robot Operating System Workshop (2017) Universiti Putra Malaysia (UPM)	2017
<b>Exhibitor</b>	Perlis Makers Day (2017)	2017
<b>Invited Exhibitor</b>	National Instruments Days 2016	2016
<b>Presenter</b>	DO-IT Segment – TV1 (2016) “Robotik Gas Bocor”	2016
<b>Speaker</b>	Workshop on Practical Deployment of Wireless Sensor Networks on Agriculture	2014
<b>Speaker</b>	Recent Works in Harumanis Research at UniMAP	2014

## Panel, Jury and Reviewer

MSc Title: Fuzzy Inference Smart Room Climatization System for Thermal Comfort Control	MSc Viva Internal Examiner	2019
Enter Corridor Training Centre (Diploma in Mechatronic Technology (Robotik))	Technical Advisory Committee	2018
Journal of Electronic & Information Systems	Editorial Board Member	2019-2022
Building and Environment	Reviewer	2020
Advanced Robotics	Reviewer	2017-2018
International Journal of Automation and Computing	Reviewer	2017
Robotics and Autonomous Systems	Reviewer	2018
Remote Sensing	Reviewer	2019
Computer Methods in Biomechanics and Biomedical Engineering	Reviewer	2017
IEEE Access	Reviewer	2017, 2018

## Research Award

<b>Gold Medal</b> ITEX 2017, Korea	CSMon: Monitoring Atmospheric Hazards in Confined Space
<b>Bronze Medal</b> SIIF 2016, Korea	ChicMon: Preventive Technique for Controlling Diseases in a Chicken Farm
<b>Silver Medal</b> SIIF 2016, Korea	OdorBot: Robot for Localizing Gas Leak
<b>Bronze Medal</b> SIIF 2016, Korea	Ambient RF-based Device-Free People Localization and Tracking
<b>Gold Medal</b> PECIPTA 2015	Gas Source Localization via Slam and Gas Distribution Mapping for Monitoring, Search and Rescue Operation
<b>Gold Medal</b> UniMAP Expo 2015	Gas Source Localization via SLAM and Gas Distribution Mapping for Monitoring, Search and Rescue Operation
<b>Gold Medal</b> UniMAP Expo 2015	Intelligent Ambient RF Sensor for Smart Building
<b>Silver Medal &amp; Leading Innovation Award</b> MTE 2014	C-SURF: Automated Channel Selection (ACS) in IEEE 802.L5.4 WSN 2.4GHz ISM Spectrum for Coexistence Mitigation
<b>Gold Medal &amp; The Best Award</b> MTE2013	Web-based Mobile Olfaction System for Detection and Monitoring Hazardous Organic Compound
<b>Bronze Medal</b> UniMAP Expo 2012	Kinect Based Search and Rescue System
<b>Gold Medal &amp; Special Award</b> i-Envex 2012	Multi-sensor Platform for Web-Based Commercial Swiftlet Habitat Monitoring and Intelligent Control System
<b>Silver Medal</b> ITEX 2012	Multi-sensor Platform for Web-Based Commercial Swiftlet Habitat Monitoring and Intelligent Control System
<b>Gold Medal</b> UniMAP Expo 2011	Multi-sensor Platform for Web-Based Commercial Swiftlet Habitat Monitoring and Intelligent Control System
<b>Silver Medal</b> Bio Malaysia 2011	Nutrient Controller for Precision Farming (NutriCon)
<b>Bronze Medal</b> PECIPTA 2011	Automated Intelligent Grading System For Local Fruits Using Vision Infrared E-Nose & Acoustic : Connecting Biology With Technology

## Grants

Year	Title	Role	Source	Amount (RM)
2021	Formulation of Enhanced Air Quality Index (EAQI) Using New Modelling- Based Feature Selection Fuzzy K- Nearest Neighbor Technique	Co-researcher	Government	140025
2021	Temperature and Humidity Control Inside Greenhouse using Machine Learning	Co-researcher	Industry	10000
2020	2D RF Propagation Characterization for Localization and Tracking Using Modified Convolutional Long Short-Term Memory Neural Network (CNN-LSTM) for High Accuracy Localization	Co-researcher	Government	131600
2020	Geran Penyelidikan Sepadan Malaysia Technical University Network (MTUN) 2019- Framework for Smart Football Arena and Smart Community Activity	Co-researcher	Government	75590
2020	Asset Movement and Utilisation Tracking System for Medical Device	Co-researcher	Government	100000
2020	Geran Penyelidikan Sepadan Malaysia Technical University Network (MTUN) 2019- Development and Deployment of Smart Community and Innovation Centre for Smart City 4.0	Co-researcher	Government	425000
2020	Geran Penyelidikan Sepadan Malaysia Technical University Network (MTUN) 2019- Framework for Smart Football Arena and Smart Community Activity	Co-researcher	Industry	75590
2020	Asset Movement And Utilisation Tracking System For Medical Device	Co-researcher	Industry	50010
2020	Geran Penyelidikan Sepadan Malaysia Technical University Network (MTUN) 2019- Development and Deployment Of Smart Community and Innovation Centre for Smart City 4.0	Co-researcher	Industry	425000
2020	UNIPRIMA : Design and Development of an Automatic Waterjet Fruit Peeling and Cutting Machine	Co-researcher	Industry	10000
2019	Improving Gas Source Localization Estimation through Temperature-Humidity Drift Model and Adaptive Kernel DM+V Algorithm	Main Researcher	Government	91970
2019	Geran Penyelidikan Sepadan Malaysia Technical University Network (MTUN) 2019- Intelligent Streetlight Monitoring and Control Network and Algorithm Design for Large Scale End-Device Deployment for Smart City	Co-researcher	Government	65000

2019	IoT Based Device Free Indoor Human Localization and Activity Tracking with Intelligent Data Analytics	Co-researcher	Government	76800
2019	An Investigation on the Efficiency and Accuracy of Localization Towards Moisture Distribution Sensing based-on Tomography Method	Co-researcher	Government	194000
2019	Geran Penyelidikan Sepadan Malaysia Technical University Network (MTUN) 2019- Intelligent Streetlight Monitoring and Control Network and Algorithm Design for Large Scale End-Device Deployment for Smart City	Co-researcher	Industry	75000
2016	Improved Localization of Gas Source Through Path Planning	Main Researcher	University	20000

## Publications

Google Scholar: <https://scholar.google.com.my/citations?user=PitV1YEAAAJ&hl=en>

Scopus: <https://www.scopus.com/authid/detail.uri?authorId=55193266400>

### JOURNAL

- Lee, Z. Y., Hawari, H. F. B., Djaswadi, G. W. B., & **Kamarudin, K.** (2021). A Highly Sensitive Room Temperature CO<sub>2</sub> Gas Sensor Based on SnO<sub>2</sub>-rGO Hybrid Composite. *Materials*, 14(3), 522. [Q1 - I.F 3.057]
- R. Visvanathan, **K. Kamarudin**, S.M. Mamduh, M. Toyoura, A.S.A Yeon, A. Zakaria, L.M. Kamarudin, X. Mao, S.A.A. Shukor (2020) "Improved mobile robot based gas distribution mapping through propagated distance transform for structured indoor environment" *Advanced Robotics* [Q2 - I.F 1.247]
- V.H. Bennetts, **K. Kamarudin**, T. Wiedemann, T.P. Kucner, S.L. Somisetty, A.J ilienthal (2019) "Multi-Domain Airflow Modeling and Ventilation Characterization Using Mobile Robots, Stationary Sensors and Machine Learning" *Sensors* [Q1 - I.F 3.031]
- K. Kamarudin**, A.Y.M. Shakaff, V.H. Bennetts, S.M. Mamduh, A. Zakaria, R. Visvanathan, A.S.A. Yeon, L.M. Kamarudin. (2018) "Integrating SLAM and Gas Distribution Mapping (SLAM-GDM) for Real-time Gas Source Localization". *Advanced Robotics* [Q2 - I.F 1.247]
- Visvanathan, R., **Kamarudin, K.**, Mamduh, S. M., Yeon, A. S. A., Zakaria, A., Kamarudin, L. M., ... & Shakaff, A. Y. M. (2018). Gas Sensing Mobile Robot: A Review. *Journal of Telecommunication, Electronic and Computer Engineering (JTEC)*, 10(1-15), 101-105.
- Razak, A. A. A., Abdullah, A. H., **Kamarudin, K.**, Saad, F. S. A., Shukor, S. A. A., Mustafa, H., & Bakar, M. A. A. (2018). Simulation of Robot Navigation for Hospital's Confined Space Areas Using Fuzzy Control. *Journal of Telecommunication, Electronic and Computer Engineering (JTEC)*, 10(1-15), 11-15



- Gunasagaran, S., **Kamarudin, K.**, Yeon, A. S. A., Visvanathan, R., Mamduh, S. M., & Zakaria, A. (2018). Implementation of Mobile Robot Localisation and Path Planning for Navigation in Known Map. *Journal of Telecommunication, Electronic and Computer Engineering (JTEC)*, 10(1-15), 67-73.
- Mamduh, S. M., **Kamarudin, K.**, Shakaff, A. Y. M., Zakaria, A., Visvanathan, R., Yeon, A. S. A., ... & Nasir, A. S. A. (2018). Gas Source Localization using Grey Wolf Optimizer. *Journal of Telecommunication, Electronic and Computer Engineering (JTEC)*, 10(1-13), 95-98.
- Kamarudin, L. M., Ahmad, R. B., Ndzi, D. L., Zakaria, A., **Kamarudin, K.**, & Ahmed, M. E. E. S. (2016). Simulation and analysis of LEACH for wireless sensor networks in agriculture. *International Journal of Sensor Networks*, 21(1), 16-26.
- Syed Zakaria, S. M. M., Visvanathan, R., **Kamarudin, K.**, Ali Yeon, A. S., Md Shakaff, A. Y., Zakaria, A., & Kamarudin, L. M. (2015). Development of a Scalable Testbed for Mobile Olfaction Verification. *Sensors*, 15(12), 30894-30912. [**Q1 - I.F 3.031**]
- Razali, M. H. M., Mamduh, S. M., **Kamarudin, K.**, Zakaria, A., Rahim, N. A., Kamarudin, L. M., ... & Shukor, S. A. A. (2015). Development of Microphone System for Low Cost Bioacoustic Device. *Journal of Medical Imaging and Health Informatics*, 5(6), 1242-1245.
- Yeon, A. S. A., **Kamarudin, K.**, Visvanathan, R., Mamduh, S. M., Kamarudin, L. M., Zakaria, A., & Shakaff, A. Y. M. (2015). Feasibility Analysis of 2D-SLAM Using Combination of Kinect And Laser Scanner. *Jurnal Teknologi*, 76(12).
- Kamarudin, K.**, Mamduh, S. M., Shakaff, A. Y. M., Saad, S. M., Zakaria, A., Abdullah, A. H., & Kamarudin, L. M. (2014). "Flexible and Autonomous Integrated System for Characterizing Metal Oxide Gas Sensor Response in Dynamic Environment." *Instrumentation Science & Technology*, 2014 [**I.F 1.418**]
- Yeon, A. S. A., Visvanathan, R., Mamduh, S. M., **Kamarudin, K.**, Kamarudin, L. M., & Zakaria, A. (2015). Implementation of Behaviour Based Robot with Sense of Smell and Sight. *Procedia Computer Science*, 76, 119-125.
- Kamarudin K**, Mamduh SM, Shakaff AYM, Zakaria A. "Performance Analysis of the Microsoft Kinect Sensor for 2D Simultaneous Localization and Mapping (SLAM) Techniques". *Sensors*. 2014; 14(12):23365-23387. [**Q1 - I.F 3.031**]
- Mamduh, S. M., **Kamarudin, K.**, Shakaff, A. Y. M., Zakaria, A., & Abdullah, A. H. (2014). "Comparison of Braitenberg Vehicles with Bio-Inspired Algorithms for Odor Tracking in Laminar Flow". *Australian Journal of Basic & Applied Sciences*, 8(4).
- Abdullah, A. H., A. Y. M. Shakaff, A. H. Adom, A. Zakaria, F. S. A. Saad, N. A. Rahim, **K. Kamarudin**, S. M. Mamduh, J. M. Sah, and T. G. Teo. "Mobile Olfaction System for Poultry Farm Malodour Monitoring." *Australian Journal of Basic & Applied Sciences* 8, no. 4 (2014).

## **REFEREED CONFERENCE PAPER**

- Shunmugam, P., **Kamarudin, K.**, Kamarudin, L. M., Zakaria, A., & Nishizaki, H. (2021, July). Two-stream deep convolutional neural network approach for RGB-D face recognition. In AIP Conference Proceedings (Vol. 2347, No. 1, p. 020055). AIP Publishing LLC.
- Shunmugam, P., **Kamarudin, K.**, Kamarudin, L. M., Zakaria, A., & Abdullah, A. N. (2021, July). A review of traditional and deep learning approaches for RGB-D face recognition. In AIP Conference Proceedings (Vol. 2347, No. 1, p. 020059). AIP Publishing LLC.
- Ismail, I. N., M. A. Z. Zakariya, N. S. Azman, M. H. Zawawi, N. M. Zahari, A. W. M. Zuhdi, **K. Kamarudin**, M. F. M. Zawawi, M. H. Basir, and M. S. F. Hussin. Electronic development for a keyless anti-theft bicycle lock system prototype. In AIP Conference Proceedings, vol. 2339, no. 1, p. 020034. AIP Publishing LLC, 2021.
- Wye, K. F. P., Zakaria, S. M. M. S., Kamarudin, L. M., Zakaria, A., Ahmad, N. B., & **Kamarudin, K.** (2021, February). RSS-based Fingerprinting Localization with Artificial Neural Network. In Journal of Physics: Conference Series (Vol. 1755, No. 1, p. 012033). IOP Publishing.
- Abdullah, A. N., **Kamarudin, K.**, Mamduh, S. M., Adom, A. H., & Juffry, Z. H. M. (2020, May). Effect of Environmental Temperature and Humidity on Different Metal Oxide Gas Sensors at Various Gas Concentration Levels. In IOP Conference Series: Materials Science and Engineering (Vol. 864, No. 1, p. 012152). IOP Publishing.
- Shunmugam, P., **Kamarudin, K.**, Mosed, A. A. A., & Shukor, S. A. A. (2019, November). Human Identification through Kinect's Depth, RGB, and Sound Sensor. In IOP Conference Series: Materials Science and Engineering (Vol. 705, No. 1, p. 012040). IOP Publishing.
- Nurhaida, A. S., Firdaus, A. A., **Kamarudin, K.**, Azmi, S. A., Ridzuan, M. J. M., & Hafis, S. M. (2019, November). Design and Development of Three-Phase Voltage Source Inverter for Variable Frequency Drive. In IOP Conference Series: Materials Science and Engineering (Vol. 705, No. 1, p. 012016). IOP Publishing.
- Soo, K. W., **Kamarudin, K.**, Bennetts, V. H., Visvanathan, R., Yeon, A. A., Mamduh, S. M., & Zakaria, A. (2019, November). SLAM-GDM Implementation on Robot Operating System for Gas Source Localization. In IOP Conference Series: Materials Science and Engineering (Vol. 705, No. 1, p. 012018). IOP Publishing.
- Mosed, A. A. A., **Kamarudin, K.**, & Puvaneswari, S. (2019, November). Orientation Correction of Kinect's 3D Depth Data for Mapping. In IOP Conference Series: Materials Science and Engineering (Vol. 705, No. 1, p. 012030). IOP Publishing.
- Norzam, W. A. S., Hawari, H. F., & **Kamarudin, K.** (2019, November). Analysis of Mobile Robot Indoor Mapping using GMapping Based SLAM with Different Parameter. In IOP Conference Series: Materials Science and Engineering (Vol. 705, No. 1, p. 012037). IOP Publishing.
- Wye, K. F. P., Kanagaraj, E., Zakaria, S. M. M. S., Kamarudin, L. M., Zakaria, A., **Kamarudin, K.**, & Ahmad, N. (2019, November). RSSI-based Localization Zoning using K-Mean Clustering. In IOP Conference Series: Materials Science and Engineering (Vol. 705, No. 1, p. 012038). IOP Publishing.
- Yeon, A. S. A., Visvanathan, R., **Kamarudin, K.**, Mamduh, S. M., Zakaria, A., & Kamarudin, L. M. (2019, November). Gas source localization accuracy: A comparison between conventional,

weighted arithmetic mean and kernel-based gas distribution mapping methods in small indoor area. In IOP Conference Series: Materials Science and Engineering (Vol. 705, No. 1, p. 012034). IOP Publishing.

Abdullah, A. N., **Kamarudin, K.**, Mamduh, S. M., & Adom, A. H. (2019, November). Development of MOX Gas Sensors Module for Indoor Air Contaminant Measurement. In IOP Conference Series: Materials Science and Engineering (Vol. 705, No. 1, p. 012029). IOP Publishing.

Hing, C. H., PW, K. F., Zakaria, S. S., Kamarudin, L. M., Zakaria, A., Kanagaraj, E., ... & Ahmad, N. (2019, November). Map-based localization indoor environment for object tracking using RF trackers. In IOP Conference Series: Materials Science and Engineering (Vol. 705, No. 1, p. 012036). IOP Publishing.

Ismail, I. N. B., Khean, F. F., Zawawi, M. H., Zahari, N. M., Abidin, S. Z., Yusairah, W. N., ... & Basir, M. H. (2019, July). Analysis on filtering performance of solar powered water treatment device (SWAD) prototype. In AIP Conference Proceedings (Vol. 2129, No. 1, p. 020017). AIP Publishing LLC.

Lip, C. J., **Kamarudin, K.**, Yeon, A. S. A., Kamarudin, L. M., Visvanathan, R., Zaidi, A. F. A., ... & Nooriman, W. M. (2018, August). Human 3D Reconstruction and Identification Using Kinect Sensor. In 2018 International Conference on Computational Approach in Smart Systems Design and Applications (ICASSDA) (pp. 1-7). IEEE.

Syaqur, W. A., Yeon, A. S. A., Abdullah, A. H., **Kamarudin, K.**, Visvanathan, R., Ismail, A. H., ... & Zakaria, A. (2018, August). Mobile Robot Based Simultaneous Localization and Mapping in UniMAP's Unknown Environment. In 2018 International Conference on Computational Approach in Smart Systems Design and Applications (ICASSDA) (pp. 1-5). IEEE.

Nooriman, W. M., Abdullah, A. H., Rahim, N. A., & **Kamarudin, K.** (2018, April). Development of wireless sensor network for Harumanis Mango orchard's temperature, humidity and soil moisture monitoring. In 2018 IEEE Symposium on Computer Applications & Industrial Electronics (ISCAIE) (pp. 263-268). IEEE.

Yeon, A. S. A., **Kamarudin, K.**, Visvanathan, R., Zakaria, S. M. M. S., Zakaria, A., & Kamarudin, L. M. (2018). Gas Source Localization via Behaviour Based Mobile Robot and Weighted Arithmetic Mean. In IOP Conference Series: Materials Science and Engineering (Vol. 318, No. 1, p. 012049). IOP Publishing.

Shukri, S & Kamarudin, LM & Lorater Ndzi, D. & Zakaria, Ammar & Norlyna Azemi, Saidatul & **Kamarudin, K** & Syed Zakaria, Syed Muhammad Mamduh. (2017). RSSI-based Device Free Localization for Elderly Care Application. 125-135. 10.5220/0006361901250135.

Abdullah, A.H., Shukor, S.A., Kamis, M.S., Shakaff, A.Y.M., Zakaria, A., Rahim, N.A., Mamduh, S.M., **Kamarudin, K.**, Saad, F.S.A., Masnan, M.J. and Mustafa, H., 2017, March. Calibration of an electronic nose for poultry farm. In AIP Conference Proceedings (Vol. 1808, No. 1, p. 020002). AIP Publishing.

Mamduh, S. M., **Kamarudin, K.**, Visvanathan, R., Yeon, A. S. A., Shakaff, A. Y. M., Zakaria, A., ... & Abdullah, A. H. (2017, March). Gas dispersion with induced airflow in mobile olfaction testbed. In *AIP Conference Proceedings* (Vol. 1808, No. 1, p. 020051). AIP Publishing.

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ambient temperature and humidity: Effects on gas distribution mapping. In *AIP Conference Proceedings* (Vol. 1808, No. 1, p. 020025). AIP Publishing.

Razak, A. A. A & Abdullah, A.H & **Kamarudin, K.** & Abu Bakar, Muhammad Aizat & E. M. Salih, J & Ilias, Bukhari & Abdul Shukor, Shazmin & Ahmad Saad, Fathinul & H. Mustafa, M. (2017). Development of Mobile Robot in Confined Space Application. 190-195. 10.1109/CSPA.2017.8064949.

Razak, A. A. A., Abdullah, A. H., **Kamarudin, K.**, Saad, F. S. A., Shukor, S. A., Mustafa, H., & Bakar, M. A. A. (2016, September). Mobile robot structure design, modeling and simulation for confined space application. In *Robotics and Manufacturing Automation (ROMA), 2016 2nd IEEE International Symposium on* (pp. 1-5). IEEE.

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## **INDUSTRIAL CASE STUDIES**

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## **Patents/Copyright**

Title: OdorBot – Robot for localizing gas source  
Authority: Patent Search (Novel)  
Date: 17th November 2015

Title: OdorBOT  
Authority: *UK Copyright Service*  
Period: 2015 to 2020

Title: C-SURF: *Automated Channel Selection (ACS) in IEEE 802.L5.4 WSN 2.4GHz ISM Spectrum for coexistence Mitigation*  
Authority: *UK Copyright Service*  
Period: 2014 to 2024

## Corporate Social Responsibility (CSR)

Activity	Year	Level
UniMAP Chess Player in Sukan Staf Universiti Malaysia (SUKUM)	2016	National
Secretariat and Arbiter of Catur Santai Competition UniMAP	2016	National
Committee and Teacher for CSR Program (CEASTech-Aqrab Model School for Lego Mindstorm)	2017-2019	National
Head Secretariat and Arbiter of Catur Santai Competition UniMAP 2017	2017	National
Evaluation Panel Fiesta 2017	2017	University
Committee Perlis Makers Day 2017	2017	National
Head Committee Rero:Micro & Arduino Workshop 2018 - Collaboration Cytron and Unimap	2018	National
Committee National Robotic Competition (NRC) 2018 Perlis	2018	National
Secretariat and Arbiter of Catur Santai Merdeka Competition UniMAP 2018	2018	National
Jury 3rd INNOCOM 2018	2018	National
Jury Fetex2018	2018	University
Head Committee Rero Robotics And Coding Campaign 2018 Program - Collaboration Cytron and Unimap	2018	National
Jury Anex19	2019	University
Secretariat and Arbiter Chess Competition Ministry of Health Malaysia 2019	2019	National
UniMAP Chess Player in "Karnival Sukan kakitangan Akademik"	2019	National
Committee "Cross Border Mobility" Program with Thailand University 2019	2019	International
Motivational Talk to Sri Ramakrishna Institute of Technology (SRIT), India Students. Title: Think Like an Engineer.	2020	International
Advisor to UniMAP Chess Club	2021-present	University
Advisor to UniMAP Robotic Club	2021-present	University

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