



PROF. IR. DR. HAFIZAL BIN MOHAMAD

PENSYARAH UNIVERSITI GRED
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CONTACT

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Faculty: Fakulti

Kejuruteraan Dan Alam

Bina

SUPERVISION

PhD - Completed: 0, Ongoing: 2

Master - Completed: 0,
Ongoing: 1

AREAS OF EXPERTISE

Digital Communications Networks

Radio Frequency And Wireless Systems

Expert Systems And Machine Learning

ACADEMIC QUALIFICATION

PhD in Wireless Communications (2004)

Bachelor in Electronic (1998)

RESEARCH

1. FARMNET: DECENTRALIZED MONITORING AND CONTROL SYSTEM FOR POULTRY FARM MANAGEMENT

2026

GERAN ANTARABANGSA

ON GOING

CO-RESEARCHER

2. AUTOMATED MACHINE LEARNING SYSTEM FOR INSTALLATION, OPERATION AND MAINTENANCE OF SOLAR PROJECTS USING SATELLITE AND DRONE IMAGERY

2025

GERAN KPT

ON GOING

MAIN RESEARCHER

3. SMART AQUAGUARD: IOT-POWERED WATER QUALITY MONITORING FOR SUSTAINABLE AQUATIC MANAGEMENT

2025

GERAN KPT

ON GOING

CO-RESEARCHER

4. GOLD AUTHENTICATION SYSTEM

2025

GERAN PENYELIDIKAN INDUSTRI

ON GOING

CO-RESEARCHER

5. AUTOMATED MACHINE LEARNING SYSTEM FOR INSTALLATION, OPERATION AND MAINTENANCE OF SOLAR PROJECTS USING SATELLITE AND DRONE IMAGERY

2025

GERAN PENYELIDIKAN INDUSTRI

ON GOING

MAIN RESEARCHER

RESEARCH

6. SURFACE PLASMON RESONANCE-BASED PHOTONIC CRYSTAL FIBER SENSOR FOR ACCURATE MICROPLASTIC DETECTION IN WATER USING ARTIFICIAL NEURAL NETWORKS

2025 GERAN KPT ON GOING CO-RESEARCHER

7. QURANIC SIGN LANGUAGE DETECTION SYSTEM USING LSTM NEURAL NETWORK

2024 GERAN PENYELIDIKAN USIM ON GOING CO-RESEARCHER

8. DEVELOPING LEGAL FRAMEWORK OF ARTIFICIAL INTELLIGENCE FOR SUSTAINABLE SOLID WASTE MANAGEMENT IN MALAYSIA

2024 GERAN PENYELIDIKAN USIM ON GOING CO-RESEARCHER

9. TAARIQ: DESIGN AND DEVELOPMENT OF AN AI-BASED HUMANOID ROBOT

2023 GERAN PENYELIDIKAN KHAS ON GOING CO-RESEARCHER

10. INTELLIGENT DRONE NAVIGATION UNDER TREE CANOPY AND ITS DEEP LEARNING AIDED DATA POST-PROCESSING

2022 GERAN PENYELIDIKAN INDUSTRI ON GOING MAIN RESEARCHER

11. TAARIQ: AUTONOMOUS PERSON-FOLLOWING TELEPRESENCE ROBOT USING STEREO CAMERA AND DEEP LEARNING YOLO

2022 GERAN PENYELIDIKAN USIM ON GOING CO-RESEARCHER

12. ANTICIPATING THE NEXT COVID-19 WAVE THROUGH STRUCTURAL AND PHYLOGENETIC ANALYSIS OF SARS-COV-2 S PROTEIN MUTATIONS IN NEGERI SEMBILAN

2022 GERAN PENYELIDIKAN USIM COMPLETED CO-RESEARCHER

13. DEVELOPMENT OF MOBILE APPLICATION FOR "EDUCATIONAL GAMES FOR KIDS WITH LEARNING DISABILITIES: KID WONDERS - KINDERS"

2022 GERAN PENYELIDIKAN AGENSI KERAJAAN COMPLETED CO-RESEARCHER

14. DEVELOPMENT OF INTELLIGENT WATER QUALITY MONITORING SYSTEM FOR AGRICULTURE SECTOR IN MALAYSIA

2022 GERAN SEPADAN AGENSI KERAJAAN ON GOING CO-RESEARCHER

15. MOBILITY AND HANDOVER OPTIMIZATION FOR DEEP LEARNING ASSISTED ULTRA-DENSE 6G HETEROGENEOUS NETWORKS

2021 GERAN KPT ON GOING MAIN RESEARCHER

16. SOLAR GREEN FACADE AND IOT - BASED SYSTEM FOR INDOOR AIR QUALITY TOWARDS A SUSTAINABLE LIFE OF 'SAKINAH'

2021 GERAN PENYELIDIKAN FLAGSHIP ON GOING CO-RESEARCHER

17. AUTONOMOUS HUMAN DETECTION AND LOCALIZATION USING MACHINE LEARNING

2021 GERAN KPT (KKP) COMPLETED CO-RESEARCHER

18. DESIGN AND DEVELOPMENT OF PERSONAL PROTECTIVE EQUIPMENT (PPE) BOX FOR HEALTHCARE APPLICATION

2020 GERAN PENYELIDIKAN COVID-19 COMPLETED MAIN RESEARCHER

PUBLICATION

1. ENHANCING OIL PALM FRUIT DETECTION: A COMPARATIVE ANALYSIS OF YOLO ALGORITHMS

INTERNATIONAL JOURNAL OF INNOVATION AND INDUSTRIAL REVOLUTION

2025 JOURNAL OTHER DATABASE CORRESPONDING AUTHOR

2. MOBILITY AND HANDOVER MANAGEMENT IN 5G/6G NETWORKS: CHALLENGES, INNOVATIONS, AND SUSTAINABLE SOLUTIONS

TECHNOLOGIES

2025 JOURNAL JCR CO-AUTHOR

3. QURANIC SIGN LANGUAGE RECOGNITION - CHALLENGES AND FUTURE DIRECTIONS FOR EDGE-AWARE SYSTEMS

INTERNATIONAL SEMINAR ON INTELLIGENT TECHNOLOGY AND ITS APPLICATIONS (ISITIA)

2025 PROCEEDING SCOPUS CO-AUTHOR

4. AI-POWERED LEGAL FRAMEWORK FOR OPTIMIZING SUSTAINABLE HOUSEHOLD SOLID WASTE RECYCLING IN MALAYSIA

IGIIDEATION 2025 INTERNATIONAL GRAND INVENTION, INNOVATION AND DESIGN EXPO REVOLUTIONIZING IDEAS FOR PIONEERING THE FUTURE

2025 CHAPTER IN BOOK CO-AUTHOR

5. QUANTIFYING THE AVAILABILITY OF TV WHITE SPACE FOR COGNITIVE RADIO IN MALAYSIA

7TH IEEE INTERNATIONAL CONFERENCE ON ADVANCED TECHNOLOGIES, SIGNAL AND IMAGE PROCESSING (ATSIP 2024)

2024 PROCEEDING SCOPUS MAIN AUTHOR

6. ENHANCING BANDWIDTH AND GAIN OF CYLINDRICAL DIELECTRIC RESONATOR ANTENNA ARRAYS USING SUBSTRATE INTEGRATED WAVEGUIDE TECHNIQUE

2024 IEEE ASIA-PACIFIC CONFERENCE ON APPLIED ELECTROMAGNETICS (APACE 2024)

2024 PROCEEDING SCOPUS MAIN AUTHOR

7. PERFORMANCE ENHANCEMENT OF CDRA FOR 5G APPLICATIONS

INTERNATIONAL CONFERENCE ON ADVANCED TELECOMMUNICATION AND NETWORKING TECHNOLOGIES (ATNT 2024)

2024 PROCEEDING NON-INDEX MAIN AUTHOR

8. HANDOVER PERFORMANCE OF MOBILITY ROBUSTNESS OPTIMIZATION FOR BEYOND 5G NETWORKS (5G)

14TH IEEE SYMPOSIUM ON COMPUTER APPLICATIONS AND INDUSTRIAL ELECTRONICS (ISCAIE 2024)

2024 PROCEEDING NON-INDEX MAIN AUTHOR

9. IOT-BASED MONITORING SYSTEM FOR INDOOR AIR QUALITY USING THINGSBOARD

CONFERENCE ON APPLIED ELECTRONICS AND ENGINEERING (ICAEE 2024)

2024 PROCEEDING NON-INDEX MAIN AUTHOR

10. HANDOVER PERFORMANCE OF MOBILITY ROBUSTNESS OPTIMIZATION FOR BEYOND 5G NETWORKS

2024 IEEE 14TH SYMPOSIUM ON COMPUTER APPLICATIONS & INDUSTRIAL ELECTRONICS

2024 PROCEEDING SCOPUS CO-AUTHOR

11. HANDOVER PARAMETER FOR SELF-OPTIMISATION IN 6G MOBILE NETWORKS: A SURVEY

AJ - ALEXANDRIA ENGINEERING JOURNAL

2023 JOURNAL SCOPUS CORRESPONDING AUTHOR

12. INTELLIGENT COORDINATED SELF-OPTIMIZING HANDOVER SCHEME FOR 4G/5G HETEROGENEOUS NETWORKS

ICT EXPRESS

2023 JOURNAL OTHER DATABASE MAIN AUTHOR

13. IOT BASED INDOOR AIR AND WATER QUALITY MONITORING SYSTEM USING NODE-RED

9TH INTERNATIONAL CONFERENCE ON COMPUTER AND COMMUNICATION ENGINEERING (ICCC 2023)

2023 PROCEEDING SCOPUS MAIN AUTHOR

PUBLICATION

14. DESIGN OF SINGLE STAGE C BAND ERBIUM DOPED FIBER AMPLIFIER (EDFA) FOR OPTICAL COMMUNICATION

TECHNOLOGIES IN SCIENCE AND ENGINEERING : A MULTIDISCIPLINARY APPROACH

2023 CHAPTER IN BOOK CO-AUTHOR

15. HANDOVER MANAGEMENT OVER DUAL CONNECTIVITY IN 5G TECHNOLOGY WITH FUTURE ULTRA-DENSE MOBILE HETEROGENEOUS NETWORKS: A REVIEW

INTERNATIONAL JOURNAL ENGINEERING SCIENCE AND TECHNOLOGY

2022 JOURNAL JCR MAIN AUTHOR

16. TIME SERIES FORECASTING MODEL OF FUTURE SPECTRUM DEMANDS FOR MOBILE BROADBAND NETWORKS IN MALAYSIA, TURKEY, AND OMAN

AEJ - ALEXANDRIA ENGINEERING JOURNAL

2022 JOURNAL SCOPUS MAIN AUTHOR

17. OVERVIEW OF EVOLUTIONARY ALGORITHMS AND NEURAL NETWORKS FOR MODERN MOBILE COMMUNICATION

TRANSACTIONS ON EMERGING TELECOMMUNICATIONS TECHNOLOGIES

2022 JOURNAL ISI MAIN AUTHOR

18. CONFLICT RESOLUTION STRATEGY IN HANDOVER MANAGEMENT FOR 4G AND 5G NETWORKS

CMC-COMPUTERS MATERIALS & CONTINUA

2022 JOURNAL ISI MAIN AUTHOR

19. MOBILITY-AWARE OFFLOADING DECISION FOR MULTI-ACCESS EDGE COMPUTING IN 5G NETWORKS

SENSORS

2022 JOURNAL ISI MAIN AUTHOR

20. HANDOVER MANAGEMENT FOR DRONES IN FUTURE MOBILE NETWORKS?A SURVEY

SENSORS

2022 JOURNAL ERA MAIN AUTHOR

21. EFFICIENT RADIO RESOURCE ALLOCATION SCHEME FOR 5G NETWORKS WITH DEVICE-TO-DEVICE COMMUNICATION

INTERNATIONAL JOURNAL OF ELECTRICAL AND COMPUTER ENGINEERING (IJECE)

2021 JOURNAL WOS MAIN AUTHOR / CONTACT PERSON IN USIM

22. MILLIMETRE-WAVE PROPAGATION CHANNEL BASED ON NYUSIM CHANNEL MODEL WITH CONSIDERATION OF RAIN FADE IN TROPICAL CLIMATES

IEEE ACCESS

2021 JOURNAL ISI MAIN AUTHOR / CONTACT PERSON IN USIM

23. HANDOVER MANAGEMENT OF DRONES IN FUTURE MOBILE NETWORKS: 6G TECHNOLOGIES

IEEE ACCESS

2021 JOURNAL ISI MAIN AUTHOR / CONTACT PERSON IN USIM

24. HANDOVER PARAMETERS OPTIMISATION TECHNIQUES IN 5G NETWORKS

SENSORS

2021 JOURNAL ERA MAIN AUTHOR / CONTACT PERSON IN USIM

25. UTILITY FUNCTION BASED RESOURCE BLOCK SCHEDULING IN WIRELESS NETWORKS

2021 26TH IEEE ASIA-PACIFIC CONFERENCE ON COMMUNICATIONS (APCC)

2021 PROCEEDING NON-INDEX CO-AUTHOR

26. PEATLANDS MONITORING IN MALAYSIA WITH IOT SYSTEMS: PRELIMINARY EXPERIMENTAL RESULTS

INTERNATIONAL CONFERENCE ON COMPUTATIONAL INTELLIGENCE IN INFORMATION SYSTEM

2021 PROCEEDING NON-INDEX CO-AUTHOR

PUBLICATION

27. PEATLANDS MONITORING IN MALAYSIA WITH IOT SYSTEMS: PRELIMINARY EXPERIMENTAL RESULTS

COMPUTATIONAL INTELLIGENCE IN INFORMATION SYSTEMS

2021

CHAPTER IN BOOK

MAIN AUTHOR

28. EFFECT OF THE SLOT SHAPE AND GROUND PLANE ON THE MICROSTRIP PATCH ANTENNA PERFORMANCE

ADVANCES IN SUSTAINABLE LIVING: ENGINEERING AND TECHNOLOGY

2021

CHAPTER IN BOOK

CO-AUTHOR

29. A COMPREHENSIVE SURVEY ON MOBILITY MANAGEMENT IN 5G HETEROGENEOUS NETWORKS: ARCHITECTURES, CHALLENGES AND SOLUTIONS

IEEE ACCESS

2020

JOURNAL

ISI

MAIN AUTHOR

30. HYBRID NEAREST NEIGHBOUR AND FEED-FORWARD NEURAL NETWORKS ALGORITHM FOR INDOOR POSITIONING SYSTEM

2020 IEEE 8TH CONFERENCE ON SYSTEMS, PROCESS AND CONTROL (ICSPC)

2020

PROCEEDING

NON-INDEX

MAIN AUTHOR

AWARDS/RECOGNITION

1. ACADEMIC ADVISOR

FAKULTI TEKNOLOGI KEJURUTERAAN KELAUTAN DAN INFORMATIK (FTKKI), UNIVERSITI MALAYSIA TERENGGANU (UMT)

2025 NATIONAL

2. AI-POWERED LEGAL FRAMEWORK FOR OPTIMIZING SUSTAINABLE HOUSEHOLD SOLID WASTE RECYCLING IN MALAYSIA

INTERNATIONAL GRAND INVENTION, INNOVATION, AND DESIGN EXPO (IGIIDeation) 2025, IIUM

2025 ANTARABANGSA SILVER

3. ACADEMIC ADVISOR

FAKULTI KEJURUTERAAN ELEKTRONIK DAN KEJURUTERAAN KOMPUTER (FKEKK), UNIVERSITI TEKNIKAL MALAYSIA MELAKA (UTEM)

2024 NATIONAL

4. STAF CONTOH FKAB

2023 UNIVERSITY

5. ACADEMIC ADVISOR

UNIVERSITI KUALA LUMPUR KAMPUS CAWANGAN MALAYSIAN INSTITUTE OF INFORMATION TECHNOLOGY (UNIKL - MIIT)

2022 NATIONAL

6. ACADEMIC ADVISOR

FAKULTI KEJURUTERAAN ELEKTRONIK DAN KEJURUTERAAN KOMPUTER (FKEKK), UNIVERSITI TEKNIKAL MALAYSIA MELAKA (UTEM)

2022 NATIONAL

7. E-PROSUMER: SMART PRECISION FERTIGATION SYSTEM

Persidangan dan Ekspo Ciptaan Institusi Pengajian Tinggi Antarabangsa (PECIPTA22)

2022 ANTARABANGSA SILVER

8. RUBBER TREE TRUNK HUMIDITY INSPECTOR

PERTANDINGAN REKACIPTA INOVASI INTERNASIONAL & NASIONAL 2022 (PRIIN 2022)

2022 ANTARABANGSA SILVER

9. IOT-BASED BATTERY MONITORING SYSTEM

PERTANDINGAN HASIL PERTANIAN INDUSTRI ASAS TANI DAN INOVASI

2022 UNIVERSITI CERTIFICATE OF APPRECIATION

10. ACADEMIC ADVISOR

FAKULTI TEKNOLOGI KEJURUTERAAN KELAUTAN DAN INFORMATIK (FTKKI), UNIVERSITI MALAYSIA TERENGGANU (UMT)

2021 NATIONAL

11. ACADEMIC ADVISOR

FAKULTI KEJURUTERAAN, UNIVERSITI PUTRA MALAYSIA (UPM)

2021 NATIONAL

12. SMART PRECISION FERTIGATION SYSTEM

PERTANDINGAN REKACIPTA INOVASI NASIONAL (PRIN) 2021

2021 ANTARABANGSA GOLD

13. SMART VILLAGE

PERTANDINGAN REKACIPTA INOVASI NASIONAL (PRIN) 2021

2021 ANTARABANGSA GOLD

14. E-PROSUMER: SMART PRECISION FERTIGATION SYSTEM

INTERNATIONAL VIRTUAL EXPO OF INNOVATION PRODUCT AND SYSTEM DESIGN (In-VIDE) 2021

2021

ANTARABANGSA

SILVER