



Institution of
**MECHANICAL
ENGINEERS**

6th International Workshop on Functional Reverse Engineering of Machine Tools (WRE 2024)

14th December 2024

Theme – AI for Industrial Transformation

Hybrid

Inauguration Ceremony

| Activities | Schedule (Pakistan Standard Time) | Meeting Link & Venue |
|--|-----------------------------------|--|
| Registration of on-campus speakers, session chairs and guests | 8:00–8:45 AM | Venue: AHA Auditorium Meeting link: Topic: WRE 2024 - Inauguration Ceremony Time: Dec 14, 2024, 08:00 AM Islamabad, Karachi, Tashkent Join Zoom Meeting https://zoom.us/j/91603362476?pwd=UaK09er56ksc8L7i2ngxHat2RcqHbg.1 Meeting ID: 916 0336 2476 Passcode: 837521 |
| Mic and camera check for online participants | 8:00–8:45 AM | |
| Guests to be seated at the Venue | 8:55 AM | |
| Recitation from the Holy Qur'an | 09:00 AM | |
| National Anthem | 09:05 AM | |
| Welcome Address by General Co-Chair, Prof. Dr. S. M. Hasan Zaidi, Acting Rector GIK Institute, Pakistan. | 9:10 AM | |
| Theme Talk – 1: AI for Digital Transformation; Prof. Dr. Muhammad Tufail, PVC, NEDUET, Karachi, Pakistan | 09:25 AM | |
| Keynote Talk 1: Enhancing Competitiveness of the Pakistani Automobile Industry Through AI: A strategic Perspective, Prof. Dr. Tauseef Aized Khan, UET Lahore, Pakistan | 09:45 AM | |
| Keynote Talk 2: Bridging the Future of Learning and Innovation: Harnessing Digital Twin Technology in Education and Industry, Prof. Dr. Bhawani Shankar Chowdhary SI, Mehran UET, Pakistan | 10:05 AM | |
| Address by Guest of Honor Director General DoST | 10:25 AM | |
| Address by Chief Guest Prof. Dr. Fazal A. Khalid, SI, General Chair WRE 2024 | 10:35 AM | |
| Presentation of Shield to the Guests by General Chair WRE 2024 | 10:55 AM | |
| Group Photo | 11:00 AM | |

Tea Break: 11:00 AM – 11:20 AM



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Parallel Technical Session 1: AI for Manufacturing

Session Chairs: Prof. Dr. Ghulam Hussain, University of Bahrain, Bahrain, Dr. Massab Junaid, GIK Institute, Pakistan

| Chapter/Invited Talk Title | Author/Speaker & Affiliation | Schedule (Pakistan Standard Time) | Meeting Link & Venue |
|---|--|-----------------------------------|---|
| Keynote Talk 3: AI in Industrial Transformation: Concept of Smart Maintenance | Dr. Uzair Khaleeq uz Zaman CEME, NUST, Pakistan | 11:30 AM to 11:50 AM | Venue: Main Lecture Hall 1, New Academic Block First Floor |
| Role of AI in Maximizing Productivity of Manufacturing Systems | Dr. Muhammad Iqbal SINES, NUST, Pakistan | 11:50 AM to 12:10 PM | Meeting link: Topic: WRE 2024 - Technical Session 1: AI for Manufacturing Time: Dec 14, 2024 11:30 AM Islamabad, Karachi, Tashkent |
| AI-Based Manufacturing of Smart Sensors for Rapid Sign Language Detection | Weiyue Jin Tsinghua University China | 12:10 PM to 12:30 PM | Join Zoom Meeting https://zoom.us/j/97273951353?pwd=IDo1Awzj9J0pkG62pVuoEHozdrL4DG.1 |
| Invited Talk: Optimization of Drop-on-Demand Inkjet Printing: Nozzle Properties, Fluid Properties and Driving Mechanism | Dr. Anas Bin Aqeel CEME, NUST, Pakistan | 12:30 PM to 12:50 PM | Meeting ID: 972 7395 1353 Passcode: 113676 |

Lunch & Prayer Break (1:00 PM to 2:00 PM)



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Parallel Technical Session 2: AI in Industry 4.0

Session Chairs: Professor Dr. Bhawani Shankar Chowdhary SI, Mehran UET, Pakistan, Dr. Ali Turab, GIK Institute, Pakistan

| Chapter/Invited Talk Title | Author/<u>Speaker</u> & Affiliation | Schedule (Pakistan Standard Time) | Meeting Link & Venue |
|---|---|--|--|
| Keynote Talk 4: Artificial Intelligence for Malware Reverse Engineering to achieve Operational Technology (OT) Cyber Security | Prof. Dr. Muhammad Asad Arfeen, NED UET, Karachi | 11:30 AM to 11:50 AM | Venue: Main Lecture Hall 2, New Academic Block First Floor Meeting link: Topic: WRE 2024 - Technical Session 2: AI in Industry 4.0 Time: Dec 14, 2024 11:30 AM Islamabad, Karachi, Tashkent Join Zoom Meeting https://zoom.us/j/99246013792?pwd=t9FoUbuVYrRlxGOXz81gtabepQJfa.1 Meeting ID: 992 4601 3792 Passcode: 206729 |
| Deep Learning Based Tool Orientation/Pose Estimation for Robotic Machining | Dr. Ghani University of Bahrain, Bahrain | 11:50 AM to 12:10 PM | |
| AI-enabled Age-Tech devices and platforms | Dr. Humayun Rashid Xavor Corporation, China | 12:10 PM to 12:30 PM | |
| Revolutionizing Industry 4.0 with 5G and 6G: The Role of Massive MIMO in Smart Manufacturing | Dr. Zain Siddique GIK Institute, Pakistan | 12:30 PM to 12:50 PM | |

Lunch & Prayer Break (1:00 PM to 2:00 PM)





Parallel Technical Session 3: AI and Production Planning

Session Chairs: Dr. Taqi Ahmad Cheema, GIK Institute, Pakistan, Engr. Faheem Ahmad, GIK Institute, Pakistan

| Chapter/Invited Talk Title | Author/ <u>Speaker</u> & Affiliation | Schedule (Pakistan Standard Time) | Meeting Link & Venue |
|--|--|-----------------------------------|---|
| Keynote Talk 5: In the pursuit of Savings and Net Zero at the Footsteps of 5th Industrial Revolution: Artificial Intelligence for Operational Excellence of Large Industrial Complexes | Prof. Dr. Ghulam Moeenuddin UET Lahore, Pakistan | 11:30 AM to 11:50 AM | Venue: Main Lecture Hall 3, New Academic Block Second Floor Meeting link: Topic: WRE 2024 - Technical Session 3: AI and Production Planning Time: Dec 14, 2024 11:30 AM Islamabad, Karachi, Tashkent |
| Invited Talk: AI-Driven Reverse Engineering for Digital Transformation: Enhancing Reliability in SCADA Systems and Industrial Automation | Prof. Dr. Muhammad Amir Sir Syed University of Engineering and Technology Karachi, Pakistan | 11:50 AM to 12:10 PM | Join Zoom Meeting https://zoom.us/j/96855939215?pwd=d6geSV71ye8s5fea9FsF2PMvsDiW6n.1 |
| Invited Talk: The Role of Artificial Intelligence /Digital Twin in Dentistry | Dr. Shahzad Anwar UET Peshawar, Pakistan | 12:10 PM to 12:30 PM | |
| Invited Talk: Scalable Personalized Treatment Recommendation in Critical Care | Prof. Dr. Ummi Azizah YARSI University Indonesia | 12:30 PM to 12:50 PM | Meeting ID: 968 5593 9215 Passcode: 671106 |

Lunch & Prayer Break (1:00 PM to 2:00 PM)





Parallel Technical Session 4: AI, IOT and Digital Twin

Session Chairs: Prof. Dr. Pardeep Kumar QUEST, Pakistan, Dr. Shahzad Ahmad GIK Institute, Pakistan

| Chapter/Invited Talk Title | Author/ <u>Speaker</u> & Affiliation | Schedule (Pakistan Standard Time) | Meeting Link & Venue |
|--|---|-----------------------------------|--|
| Keynote Talk 6: Digital Twins- Asset Taxonomy, Risks and Potential Solutions | Prof. Dr. Shehnila Zardari NED UET, Pakistan | 2:00 PM to 2:20 PM | Venue: Main Lecture Hall 1, New Academic Block Ground Floor Meeting Link: Topic: WRE 2024 - Technical Session 4: AI, IOT and Digital Twin Time: Dec 14, 2024 02:00 PM Islamabad, Karachi, Tashkent |
| Revolutionizing CNC Machining: The Role of AI in Enhancing G and M Code Interpreter Design | Dr. Muhammad Shakeel Nanjing University of Aeronautics and Astronautics, China | 2:20 PM to 2:40 PM | Join Zoom Meeting https://zoom.us/j/93133470425?pwd=dXnQkTf38KBhYYOu59Gzmp9bfrVXz.1 Meeting ID: 931 3347 0425 Passcode: 591219 |
| Invited Talk: Navigation system medgital for surgery based on augmented reality technologies | Prof. Dr. Vladimir Ivanov Universitetskaya Embankment, Russia | 2: 40 PM to 3:00 PM | |
| Invited Talk: The Iot and Digital Twin; two different yet complementary technologies | Prof. Dr. Pardeep Kumar QUEST, Nawabshah, Pakistan | 03:00 PM to 3:20 PM | |

Tea Break: 3:20 PM – 3:40 PM





Parallel Technical Session 5: AI/ML in Technological Development

Session Chairs: Prof. Dr. Rizwan Ahmed Khan, Salim Habib University, Pakistan, Engr. Muhammad Shoaib Ijaz, GIK Institute, Pakistan

| Chapter/Invited Talk Title | Author/Speaker & Affiliation | Schedule (Pakistan Standard Time) | Meeting Link & Venue |
|---|--|-----------------------------------|---|
| Keynote Talk 7: AI and Machine Learning in Healthcare: Innovations, Applications, and Ethical Considerations | Prof. Dr. Rizwan Ahmed Khan Salim Habib University Karachi, Pakistan | 2:00 PM to 2:20 PM | Venue: Main Lecture Hall 2, New Academic Block Second Floor Meeting link: Topic: WRE 2024 - Technical Session 5: AI/ML in Technological Development Time: Dec 14, 2024 02:00 PM Islamabad, Karachi, Tashkent Join Zoom Meeting https://zoom.us/j/94069474642?pwd=VSIE4HuH1qQuVblg7iWE4rm7hG72dV.1 Meeting ID: 940 6947 4642 Passcode: 304083 |
| Multiphysics modeling and explainable machine learning for prediction of metal additive manufacturing | Dr. Chaochao Wu Fuzhou University, China | 2:20 PM to 2:40 PM | |
| Deep Learning-Based Robotic System for Efficient Object Recognition, Sorting, and Grasping on a Conveyor Belt | Muhammad Arsalan FME GIKI, Pakistan | 2: 40 PM to 3:00 PM | |
| Industry 5.0: Human Centred Manufacturing. Looking forward to details about the program | Dr. Muftooh Siddiqi Aston University UK | 03:00 PM to 03:20 PM | |

Tea Break: 3:20 PM – 3:40 PM



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Closing Ceremony

| Closing Session | Schedule (Pakistan Standard Time) | Meeting Link & Venue |
|---|-----------------------------------|--|
| Keynote Talk 8: New AI models driving the imprecision in Production Planning and Control systems by Prof. Dr. Florin Popentiu Vladicesu, National University of Science and Technology, Bucharest Romania | 3:45 PM to 4:05 PM | Venue: AHA Auditorium Meeting link: Topic: WRE 2024 - Closing Ceremony Time: Dec 14, 2024 03:30 PM Islamabad, Karachi, Tashkent Join Zoom Meeting https://zoom.us/j/92349857715?pwd=T92UhrjutjwxMaM6JZ2YaCDBfxoSIP.1 Meeting ID: 923 4985 7715 Passcode: 535787 |
| Keynote Talk 9: How AI is revolutionizing Telecommunication products manufacturing, Dr. Atif Siddiqui, Airbus Defense and Space, UK | 4:05 PM to 4:25 PM | |
| Closing Remarks by Prof. Dr. S. M. Hasan Zaidi, Acting Reactor, GIK Institute and General Co – Chair WRE 2024 | 4:25 PM to 4:45 PM | |
| Closing Remarks by Honorary Chair WRE 2024, Professor Dr. Duc Pham, OBE, Department of Mechanical Engineering, University of Birmingham, UK | 4:45 PM to 4:55 PM | |
| Address by Chief Guest (Closing Ceremony) | 4:55 PM to 5:10 PM | |
| Presentation of Shields to IMechE Advisor and Executive Committee by General Chair | 5:10 PM to 5:20 PM | |
| Vote of Thanks by Dr. Taqi Ahmad Cheema, Dean FME GIK Institute, Pakistan | 5:30 PM | |
| Group Photo | 5:35 PM | |

Thank you!

