PROFILE CV

DR AAZIR ANWAR KHAN

POSTDOC IRE, ITA, PHD ITA MENG US MSC UK GER BSC PAK

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Dr. Aazir Khan is a globally recognized lead in sustainable, and AI based technologies, policy advocacy, and electric mobility systems over the past 30 years., both in Industry and research over UK, USA, Italy, Germany, Ireland, Spain, and Pakistan. With an interdisciplinary background in vehicle technology development, green sustainable engineering, technology management and policy Advocacy, he directs the Institute of Energy, Climate, and Equity at the University of Lahore (IECE) and serves as Director of ALIERA's Green Innovation & Integration in the UK.

Featured by Forbes for leading the charge to electrification in Pakistan through EV and VRE charging infrastructures and the development of 5 hybrid Electric vehicle systems. Climate Action and Zero Emissions Policies, National Energy Vehicle Roadmap & policy and National Emerging Technologies and Security Policy Stakeholder, Sustainable and Renewable Systems Developer

SUMMARY OF 2- 3- AND 4-WHEEL VEHICLE / EV DEVELOPMENT

Commercially, worked on the Mercedes EQC, C, E class and M wagon, Volvo XC90 and XE90, Bentley Mullinar Flying spur in England, AMC REVO and the AEX for Karakoram motors in Pakistan, FIAT and CRF (Centro Richerca Fiat) punto, and Brava systems in Italy, LEMANS prototype and pro-spec series cars in NY, USA, Aliera HADES Electric Hyper Car Spec EV, twice international award nominated LEMANS LMP 1 and ProSpec vehicles, vFEATHER Electric modular vehicle prototypes

2-wheel Hybrid and Electric Vehicle and retrofitting systems – Pakistan 2021-23, First Registered patent Electric Motorcycle Cycle Prototype in Europe, 2007, 3-wheel Plugin Hybrid systems 2022

VEHICLE AND AI BASED NETWORK AND CONTROL SYSTEMS

Vehicle and AI technologies including EV modular, skateboard, origami frameless body, and structural monocoque vehicle architecture systems (2 are IP rights oriented with live AI adaptive vehicle structures). EV and hybrid powertrain and power splitting devices, supervisory controller systems including driver controllers, battery management systems, and aerodynamic, dynamic, and non-linear optimization of systems, AI based Charging station and power optimisation networks

SELECTED RESEARCH AND DEVELOPMENT PROJECTS INDIVIDUALLY AUTHORED & WON

Project Title	Project Brief	Funds	Grant Framework
National Roadmap	Deployment of the National Pakistan Energy Vehicle Roadmap, development of CARALab (Clean Air Research and Advocacy Lab) and Multi-agentic Energy Grid and Charging station Optimisation Platform. 2026-2028	$120K	PakEVO – Tara Climate fund
SAHER PAK	Sustainable Automotive Hybrid Electric Retrofitting (SAHER) technology commercial development Plan in Pakistan 2020-2027	$440K	Various funding
PAKEVO.COM	Development of the Pakistan Oversight committee for the development of EV technologies, 40+ Organistion network, National EV and Climate action policy oversights, Public discourse and infrastructure development. 2024-2026	$120K	PakEVO – Pakistan EV oversight Committee
EV-ECO2	Adaption program for EVs in Pakistan, with the development of EV systems, retrofitting conversion, systems and technology in Pakistan. 2023-2024	$60K	PakEVO – Pakistan EV Oversight committee

WAAQIA	Development of Pakistan's first indigenously developed Air Quality Monitoring System, 24 monitors on a Lahore Academic Alliance for Climate Action network of 10 institutes 2024-2025	Rs1.8M	UoL internal Development
EV-ECO	Development of EV ecosystem, including energy and fossil fuel dependency replacement, the NEEFP (Pakistan Energy ZEV replacement formula) 2022-2023	$49K	PakEVO (Asian Climate foundation)
NEVP-EVSC	Policy Evaluation and Gap analysis of the National EV Policy (2019) and Scoping study for 2 & 3-wheel ZEV and hybrid vehicles 2021-2022	$20K	European Climate Fund
WWF-SDG12	Development of Reporting mechanism on SDG-12 – Responsible consumption and Production (SDG12 online dashboard) 2021	Rs2M	WWF Pakistan
EECA-SLP	Enhancing and Enabling Climate Ambition for SLCPs Management in Pakistan for MoCC Pak 2021-2022	$100K	CCAC Action program
MYPRID	Development of Modular Hybrid Technologies and Eco-systems (industrial partner under Aliera PVT ltd) 2019-2022	Rs15M	HEC TDF Fund
C3YES	Climate Change Challenge for Youth with the Ministry of Climate Change of Pakistan. 2021	Rs3.0M	Muslim Aid UK
V-FEATHER	Development of a New Electric Vehicle Architectures for urban light duty transport and freight 2012-2016	€3.2M	EU RTD - FP7 framework programme
ECOVolve	Development of a modular green multi-terrain electric Industrial vehicle series – Commercialised into Ecovolve ltd Ireland + concept draft study 2009-2012	€220K+€25K	Enterprise Ireland (EI). Innovation partnership
RTW Turbine	Rooftop Wind Turbine proof of concept innovation voucher. 2008	€20K	EI Innovation voucher
CELLRUPT	Redesign of APV homogeniser for green fuel cell disruption. 2008-2009	€120K	EI Proof of concept
HOSPICARE	Hospital bed blower concept innovation voucher 2009	€18K	EI Innovation voucher
BIOWELL	Mechanical pre-treatment for green fuel anaerobic digestion 2006-2010	€4.4M	EI RTD FP7 Framework
PICAV	Personal inner-city accessible Vehicle development. 2010-2013	€3.8M	EU RTD FP7 Framework
SWARMITFIX	Development of a New jig and fixture system for welding automotive parts. – Main partner Centro Richerca Fiat 2004-2008	€3.2M	EU RTD FP7 Framework
REEVO	Engineering development of the ADAM motor company first Pakistan built car Reevo; development of the structural and crash resistance. 2002-2006	Rs48M	Adam Motor Co
KKM AEX:	Development of an open wheel 2 seated racer for Karakoram motor company 2003	Rs22M	Karakoram Motor Co
BEAGLE I II	Development of a long & short-range UAV systems for the Pak army 2002	Rs24M	Pak Govt. Funding

SELECTED COMMERCIAL PRODUCTION, TECHNOLOGY DEVELOPMENT & PATENTS SUCCESSES

ALIERA UK 2026	MASEMO – Multi-Agent Smart Energy Management & Optimisation system is an AI-driven platform designed to optimise the deployment of EV charging infrastructure and improve energy system efficiency.
ALIERA UK 2025	Aliera MIRAI Circle, AI agentic systems for Healthcare and Hospital management advisory system for executives.
ALIERA UK 2024 – SAHER PK	Pakistan's first Electric Hyper Car Spec vehicles concept (complete vehicle engineering design trademark and Patents) launching at the August EV EXPO Lahore 2025
ALIERA UK & SAHER PK (2023)	Pakistan's first Hybrid 2 Wheel vehicle with a patented Origami frameless structure system, and 2 Wheel conversion kit system (hybrid and Electric)
ALIERA UK & SAHER PK (2022)	Pakistan's first Hybrid and Electric 3 Wheel vehicle (development prototype of a frameless origami structure), and 3 Wheel conversion kit system for both Hybrid and Electric systems
ALIERA UK & IECE@UOL (2022)	Dynamic Multi sensorial networked air quality index monitor system
ALIERA UK (2023) – UK	Patent – IOT based vehicle asset management, data acquisition, and electric vehicle control system – under process
ALIERA UK (2023) – Pakistan	Patent – rapid pace conversion process system for electrification and retrofitting 2- and 3-wheel vehicle systems in Pakistan – under process.
ALIERA UK & IECE@UOL (2022)	in-house vehicle controller, drivers, modular battery management system for 2-, 3- and 4-wheel vehicle systems
ALIERA UK (2021) – Pakistan	Patent - Modular power splitter device for hybrid vehicle systems
BENTLEY MULLINAR UK (2020)	mechatronic interior patent system with reverse gearing on the mullinar spec'd flying spur
MERCEDES C, E CLASS and G WAGON UK (2018, 2019)	Interior development & vehicle structures programs (safety and quality regulations) under Mercedes APQP program
MERCEDES EQC (2016-17)	Development of the powertrain integration system with Mercedes onto the then current 5 seater GLC (similar wheelbase) with a modular Battery system design
VOLVO XC90 & XE90 UK/CHINA	Non-linear system development of Dynamic mechatronic systems, and internal vehicle product development - Volvo XC90 and XE90 under the Volvo APQP system program
ALIERA UK & IECE@UOL (2019)	Open Architecture, and modular control (including brain control) wheelchair system using AI based electro signal learning systems.
ALIERA UK (2015) – UK	Homogeniser attachment to shear yeast cells to create alternate fuels, IP retained
ECOVOLVE ED1000 & ED800 (2015)	High tip dumper (Electric indoor/outdoor) systems production in Ireland
ALIERA UK (AYTON WILLOW) 2012	Modular electric vehicle platform construction architecture systems and last mile freight modularity development – IP
JAVELIN EV MOTORCYCLE ITA (2005-2008)	Patent and trademark of first Electric motorcycle cruiser – European Patent with 140KW 3 phase motor and controller
HBC BLOWER (2009)	New rotor cooling system for hospital blower systems
TECMAR TOWFISH (2008-2010)	6 Axis UUV system for pipe defect detection
AMC REEVO (2006 – 2010)	Pakistan's first fully indigenous C class car structural / crash engineering systems

KMC AEX (2003 – 2004)	Karakoram motor company 4 wheel roadster AEX complete vehicle development
PTC Parametric International Design Awards 2001 & 2002	Top 5 design award for both years, LEMANS prototype racing development GIGIANDRETTI-LIDZIA 2001 and its upgrade version in 2002.
NESCOM (2003)	REV Vibration isolation design reducing amplitude from 13G to 2G
SCCA PRO-SPEC and 24-hour LEMANS RACING SERIES (1999-2001) – Developed into hyper car concept	Won 2 races of the 2001 Watkins Glen Pro Spec series aerodynamic & structural dynamics

PROFILE OF SUCCESSFUL EV AND VEHICLE COMPANIES RUN

Company	Est.	Clients & funding	Focus
ALIERA LTD London UK	2015	Automotive development programs with Centurion Electronics Ltd, Volvo, Mercedes, Bentley, Asian & European Climate Fund	Vehicle Development, Automotive development programs internationally, automotive product development, National EV policy and emerging technology advocacy
AYTON WILLOW LTD Cambridge UK	2009-2015	European Union RTD, Enterprise Ireland, and Ecovolve ltd, Ireland for industrial vehicle development	Automotive product development, research & technical development of new modular EV architecture development
AEDESIGN PVT LTD Lahore	2003	Private funding / Adam Motor company / Karakoram motor Co	Automotive Engineering Development, Pakistan Auto industry with the Launch of the ADAM REEVO

ACHIEVEMENTS - FRAMEWORKS, PANEL TALKS, & WORKSHOPS SUMMARY

FEATURES EDITORIALS, TV and MEDIA

- Featured at Forbes "The slow road to the Electrification of Everything" September 2023.
- Featured Trelleborg Group T-tech Sweden "Electric Vision" Nov 2024
- Pakistan National TV and Media video journal feature interviews, Pakistan TV, Dawn News, Aaj News, Aik News, Bol news, Talon News, Lahore Rang News, Special News, ABN News, Such TV Lok Sujag, over 40 featured articles publications, op-eds as an EV and climate action expert in Pakistan.

NATIONAL ELECTRIC VEHICLES AND GREEN TECHNOLOGY & POLICY FRAMEWORKS

- Developer of the National Energy Vehicle Roadmap 2026-2030 presented to the Minister of Energy and Secretary of Transport Punjab.
- Founder Pakistan EV oversight Community (PAKEVO.COM) (lead) of more than 40 organizations with regular meetings, consultancies, Advocacy, policy briefs, and running the the first and Pakistan AI and EV expo 2023 (Lahore), Energy & vehicles Summit 2025, (Lahore), Inaugral EV conference (Karachi 2024) and the 2nd EV conference 2025 in Lahore.
- Expert advisor to Federal Government of Pakistan Standing committees on Clean Air, and standing committee on on Vehicles Emissions 2025-
- Pakistan Emerging technologies work group (member) National Security Advisor to the Prime minister (SAPM) of Pakistan. – Development of Cybersecurity, AI & Energy security, and Personal Data Protection Bill 2021

- Expert consultations with Secretaries P&DB, Transport, EDB, PPPA, Industries, & Education. Advisory to CPPA-G, Minister of Energy, Health, National EV policy 2019 and 2025, Pakistan NDC 2.0 3.0, SDG 12 policy, PCAP, Distributed Renewable Energy Systems. Pakistan Spokesperson for IMF Executive Directors Meeting – 22 March 2022 & 25.
- Co-founder of the Lahore academic Alliance for Climate action (LAACA) for research and technology development running 24 indigenously developed AQI monitors (WAAQIA) in 2024 for clean air analytics and action.
- Leading the Transport pillar for National Climate and Energy advocacy, Tara Climate foundation and the European Climate foundation of more than 30 community -towards Pakistan's NDC goals towards CO_2 reduction and EV adaption 2020-
- Spokesperson for Pakistan's Tara Climate action groups at the IMF Executive Directors Meeting – 22 March 2022, and 2025
- The Governor of Punjab Climate action committee, Theme II: Climate change, Environment and Pollution, (member) 2023-24.
- Member of the Pakistan Renewable Energy Coalition (PREC) 2022-
- Member of the Alliance for Climate Justice and Clean Energy (ACJCE) 2023-
- Member of the National Energy Academic Network (NEAN) 2023-
- Member Pakistan Air Quality Experts group (PAQx) currently active in PM / CM air quality mitigation programs. 2024-
- USAID IP counsellor 2024, PFAN report, 2024, Making sense of AI 2024, SME energy spotlights, 23, US Councillor Green day meeting 2024.

PANELS & WORKSHOPS

- Asian Clean Energy Forum sponsored by Asian Development Bank, Keynote speaker for Retrofitting systems for developing countries, and MASEMO, Multi-Agentic Power Energy Distribution and EV charging station Optimisation, June 2-8 2025 Manilla, Philippines
- Pakevo hosted Pakistan Energy and Vehicle Summit (PEVs 2025) at the University of Lahore managing 6 panels and 8 Keynote talks on EV and Energy Policy, EV and Energy Technologies, Just Energy Transition, Energy Security, Green and Climate Financing, and Public Narrative and grassroot movements in Climate action, October 7th 8th, 2025. Host welcome keynote and moderator. CPPA-G Director and Transport Secretary Chief Guest
- Pakistan's First AI and Electric Vehicle Expo and Conference, with 24 EV manufactures, 8 keynote speaches and over 5000 visitors, with the Governor of Pakistan Chief Guest. December 2023
- Green Governance and Policy Conference, at the University of Management and Technology, keynote speaker on - National EV Policy & Pathway to Decarbonising Transport, November 2025.
- Strategic Partner as founder of Pakevo.com, and technology partner as Director of IECE of the Pakistan EVExpo and E-Bike Expo to be held at the Expo Centre, May 2026.
- Breathe Pakistan, By Dawn News Pakistan conference technology Partner as co founder of LAACA. November 2025.
- Pakevo and Climate Action Centre, Karachi co-organised 1st Inaugural EV conferences Dec 2024 Karachi, Host Keynote and panel moderator. Minister of Climate Change, Pakistan Chief guest.
- 2nd EV conference organised by pakevo and CAC Karachi April 2025 Lahore, Host Keynote and panel moderator. Bank of Punjab and Secretary of industries and Production Chief guests.
- The Governor of Punjab Climate action committee, Theme II: Climate change, Environment and Pollution general meeting at the Governor house, December 2024.

- Hosted Tharparker Citizens Forum from Thar for a workshop / discussion on Renewable Energy and implementation in Coal torn areas in Thar, March 18th, 2023
- Panellist, National SDG summit, "Climate action challenges and solutions, SDG13,14,15", Hosted by the SDG Academy & The University of Lahore, 6th February 2023.
- Distinguished Panel Speaker, SDPI Sustainable Development Policy Institute's Training on the "Prospects of a 'Green Transportation Corridor' in Pakistan, 29th December 2022
- Panellist – Climate Justice and climate finance: the case for establishing loss and damage fund for vulnerable countries, Plenary session 7, Environmental Protection Society at Government College University, sponsored by the Environmental Protection Agency, Punjab – 7th December 2022
- Chair of IECE 2 Day workshop on Technology Commercialisation, Hosted by the Pro-Rector University of Lahore in collaboration with Imperial College London April 25th 26th 2022.
- Hosted Industry Expert at Ford Motor company USA for Advanced Product Quality Planning (APQP) workshop by IECE at the University of Lahore on the 10th of May 2022.
- Speaker at Government College SDSC (sustainable development study centre) PhD group at Policy Evaluation and gap analysis of the NEVP and AIDEP Governmental Policies, hosted by the Director of Pakistan Botanical Gardens and Distinguished Professor at SDSC. 13 February 2022
- Author National EV policy (NEVP 2019) evaluation and gap analysis, and scoping study for adaption of two- and three-wheel Electric and Hybrid Vehicles in Pakistan – Jun 2022 – University of Lahore Press (available online) Presenter, EV Policy of IECE@UOL at The University of Lahore, October 2022 (sponsored by Asian Climate Foundation)
- Lead of Pakistan EV Stakeholders and Lobby group – 2022, 40-member panel under the IECE-PakEVO umbrella for EV policy and economics evaluation Created First quarter 2022
- Member of EV stakeholders' group – LUMS-USAID EV policy evaluation project, 2020-2021
- C3YES Climate Change Challenge for Youth entrepreneurship developed 2021 for youth engagement for Climate change action in Pakistan developed with UNDP, Muslim Aid, GGC, and Ministry of Climate Change (MoCC).
- Y4C youth for climate action roadmap 2021 for Pakistan developed in collaboration with UNDP and the MoCC – Distinguished Speaker at the Launch 14th August 2021 Islamabad.
- Advisor EV Ecosystem Development for the Ministry of Climate Change of Pakistan – Seminar on EV Ecosystem mapping, July 2021.
- Host and Chair of the SDG#12 Consultation Event held at the University of Lahore (Under IECE) with the Pakistan Institute of Development Economics (PIDE) and Ministry of Climate Change (MoCCPak), January 2021
- Host and Chair of the Pakistan Electric Vehicles and Artificial Intelligence in Transport Network – A stake holders club and Seminar on Emerging and Exponential Technology Development in Pakistan: Electric Vehicles and Network Commercialisation. seminar, PC Hotel 22 July 2019.
- Roadmap to Italian Robotics / Development of IPCS framework Roadmap. Including the development of social interaction rings for robotics with humans, SME (Small and Medium Enterprise) participation, Italian regional distribution towards requirements for robotics) and the development of the framework for intelligent personal care system (IPCS).
- EURON robotics roadmap workshops, EURON workshop on advanced production systems and adaptive robot servants and intelligent homes and workshop on advanced robotics, scenarios for FP7 in Karlsruhe Germany. Presented at various occasions as reports, and presentations, including SIRI, and CARE workshop and the IPCS Presentation at ISR2005

DIDACTICS DEVELOPMENT

- Development of Bachelor of Science curriculum in Intelligence Automotive Systems (BSIAS), the University of Lahore, 2025
- Development of Bachelor of Engineering Technology in AI (BETAI) curriculum, the University of Lahore, 2025
- Development of Bachelor of Science in AI and Robotics curriculum with the Department of Mechanical Engineering, The University of Lahore 2023-24 currently running two batches.
- Development of 3-week training programs for PSDF:, Computer Aided Design, (CAD) tools for sustainable product development, Electric Vehicle (EV) technology and infrastructure
- Board of Governor, Cambridge AMTB tul Binat school and College (2020-), Board of Advisor Cornerstone school and Colleges (2025-) Board of Governor, Abbas institute of technology (2021-), Abbas institute of Modern Sciences
- Research Advisor / Mentor for 12 Masters students and Italian laureate (undergraduate) students for their thesis and 6 masters and PhD students at Dublin City University.
- IMRob International Masters in Robotics Assistant Coordinator: The first International Masters in Robotics was run with MIUR initiative with University of Kaiserslautern and University of Madrid.

ACADEMICS

UNIVERSITY OF LAHORE
Lahore, Pakistan

Asst Professor – Department of Mechanical Engineering Oct 2020 - (Founder – Director, Integrated Engineering Centre of Excellence)

DUBLIN CITY UNIVERSITY
Dublin, Ireland

Post Doctorate Research Officer Jan 2009 – Nov 2010
(Green technologies, bio-engineering technology, commercial vehicle development)

UNIVERSITÀ DEGLI STUDI DI GENOVA
Genova, Italy

Post Doctorate Research Officer May 2008 – Jan 2009
Robotic systems, UAS UAV, UGV, vehicle architectures, control systems
Doctor of Philosophy in Mechanical Engineering, 2005 - May 2008
Disseminating modular aerial vehicle systems

CORNELL UNIVERSITY
Ithaca New York, USA

Master of Engineering in Mechanical Engineering – 1997 – 1999
Major in aerodynamics, structural dynamics, & finite Element Analysis

UNIVERSITY OF HERTFORDSHIRE
Hatfield, UK

Master of Science in Automobile Engineering 1995 – 1996
Integrated European master program in engineering technology & management
Major in vehicle dynamics, quality control systems TQM, six sigma APQP

HAMBURG UNIVERSITY OF APPLIED SCIENCE
Hamburg, Germany

Development of fully CAD systems concepts for analysis and assembly for EV systems 1996, Italy (8-month placement)

UNIVERSITY OF ENGINEERING AND TECHNOLOGY
Lahore Pakistan

Bachelor of Science in Metallurgical and Materials Engineering 1990 – 1995
Gold Medallist (highest aggregate final year & overall four years)
Merit Scholarships / certificates for topping 3rd and 4th years
5th AQ Khan All Pakistan Software competition 1995 – 1st Overall

WORK CV

AAZIR KHAN PHD MENG MSC BSC

SCOPE OF EXPERTISE

Vehicle Development
Green technologies
SDG scoping and development studies
Entrepreneurship – Development of Commercial companies
Project & quality assurance management
Technology research development – Research proposal and concepts development

PROJECT MANAGEMENT

Project &Team leadership
PRINCE II Cert.
APQP DMADV (DFSS Six Sigma)
FMEA & DFM
Product Lifecycle Management
PDM Data
Patent & IP Management
Dynamic Resourcing

WORK EXPERIENCE

Institute of Energy, Climate and Equity, (formally known as Integrated Engineering Centre of Excellence) – IECE ***2020 – Present***
University of Lahore
FOUNDER AND DIRECTOR IECE

In charge of, and responsible for the Institute of Energy, Climate & Equity, established at the University of Lahore to provide leadership, research, training and commercialisation of disruptive and exponential technologies, engineering, digital transformation, and Artificial Intelligence. The centre is developed around 8 PhD scholars and candidates, and an engineering staff of 8 MSc and BSc engineers with background in Sustainable development, green technologies, AI, electronics, Mechatronics, Embedded Systems, and mechanical engineering incorporating many of the assets developed through Aliera UK Ltd. It consists of two robotic labs, 5 Electronic Vehicle development and prototyping lab and AI development and testing centres. The centre also incorporates the Mechanical, Robotics and Mechanics department of the University of Lahore incorporating 12 further labs and a staff of 220 including autonomous automotive hybrid technologies and embedded electronics

GOALS

- Development of a research and technological development powerhouse. Create an SOP for research that extends to all engineering departments of the University of Lahore combined with Aliera assets in the United Kingdom.
- Create a close-knit network with the Industry in Pakistan and worldwide
- Creation of IP and commercialisation of research and technology emanating from the centre through the private entities of Cyberdrive, Ithacafield and Aliera.
- Commercialise the talents of coming from the university engineering department pool
- Development of Emerging, disruptive, and exponential technologies
- Transformation of engineering departments to meet the needs of disruptive technologies
- Incubation of Ideas and collaborations with external companies, institutes, and the industry.

ACHIEVEMENTS

- Launch of Three Electric vehicles, including Pakistan's first ever Hypercar, 3 Wheel taxi system, and a C class car to be held in Jun 2023 in Pakistan's first even VR launch.
- Launch of Pakistan's first Retrofitting EV vehicle systems Ecosystem – Development of EV retrofitting technologies, charging system, and ecosystem.
- Release of Hybrid Vehicle technologies on 2 three-wheel, and 2 two-wheel vehicle systems to be launched in June of 2023.
- Framework for Pakistan's first vehicle homologation and standardisation testing laboratories geared specifically towards Electric Vehicles, also part of IECE's proposed new Industrial Assessment Centre.
- Development of Pakistan's second ever Startup studio system with a Canadian American Consortium to start November 2023.
- Development of a sustainable city ecosystem-based Incubator system to create 30 individual based companies over 4 years.
- Development of a low detection high speed tactical Vehicle system with Vision based Machine learning, AI decision making and drone detection systems.
- Development of National EV policy with technology addendums approved for review by the Ministry of Climate Change of Pakistan

Specification Dev

Technical Doc

Financial Analysis, Costing and Risk Assessment

- Development of Cybersecurity Personal Data Protection Bill 2021 – Pakistan Emerging technologies work group
- C3YES Climate change Challenge Event for youth that reached over 7000 under 30s, engaging 350 youth participating in 96 teams with the finals held in Islamabad in October 21.
- SDG#12 Consultation Event held at the University of Lahore with the Pakistan Institute of Development Economics (PIDE) and Ministry of Climate Change.
- Launch of 8, 6–12-month, Micro Masters programs under IECE and the University of Lahore in Emerging technologies dealing with Automotive technologies, AI, Entrepreneurship, Technology Management.
- Developed 22 Concept Notes, 18 research proposals, and commercial collaborations

An IECE-Aliera collaboration has been developed to be an IP management, and AI and digitalisation company. The main purpose is to collate, manage and commercialise all IP developed over the previous companies and of that of core team of 4 directors bringing in equal IP value. Responsibilities include steering the direction of the company research and development, management of the core team and development teams (both engineering and AI) and development of a university – Aliera – Industry collaborative umbrella to bring in all previous technologies under one control structure

CURRENT PROJECTS

- ALIERA-AI: development of a technology independent roadmap for intelligent predictions and automation of decision processes regarding empirical research and data implementable on scientific data, financial analysis, political decision marketing and engineering applications.
- Hybrid Vehicle Technologies: include the development of mechatronic controller systems intelligent systems and AI based decisions and supervisory control and to develop proof of concept and demonstrators of the technologies for partners, clients and investors.
- Smart Battery System also part of the hybrid vehicle technology system for developing a AI based battery management system.
- Intelligent Wheelchair (iW) Development of a brain control module
- Commercialisation of a novel Machine Learning Framework for Prediction currently lab developed and tested extensively. This framework will become the basis for future AI projects taken by ALIERA AI. This includes the implementation of a machine learning and neural networks-based framework for pre-data extraction, data modelling, and pre- and post- analyses of empirical data. Further development is proposed through a new modelling approach through a test bed for reproducing closer to reality operating points

TECHNICAL EXPERTISE

Concept & Detail Design

3D CAD and 2D GD&T

Plastic Injection Mould

Tooled Metal Cast Structural Frameworks

Sheet Metal Design

Prototype development / testing

Mechanism/Machine Design

Multi-physics Analysis: CFD, Structural, Thermal & Magnetostatic

Linear and Nonlinear analysis

Dynamic Multi-Body Analysis

Class A surfacing

Benchmarking

Aliera Ltd London UK ***17 Dec. 2014 – Present***

FOUNDER & CEO

Concentrating on commercial development, the company has been involved in the development of High-detail precision automotive components and high-end development for high end luxury vehicle clients such as Volvo, Mercedes, Toyota and Bentley in collaboration with Centurion Electronics UK Ltd.

VOLVO (XC90 EXCELLENCE)

- APQP adherence through DFMEA design reviews & verification processes, maintenance of BOM, release, managing standards and technical specifications for both Centurion and Volvo and following up on 8D requirements, Kinematic design validation through multi-body dynamic analysis and DFMA development. Liaison between tool suppliers, and customer for release, managing engineering change request (ECR) procedures, updating the prototype, experimental, & release assemblies

MERCEDES (G WAGON, AND C CLASS) AND EQC EV SUV (2016-2019)

Development of Mercedes interior development and structures and Electric powertrain integration into the CLC SUV systems for the 2016 EQC.

- Involved in the APQP process DFMEA, PPAP liaison with the client and suppliers in Germany, Taiwan and China. A surface development and validation and development of moulded parts through DFMA of the complete product • development of components and electrical housings catering for CE certification. GD&T drawings, Nonlinear explicit dynamic analysis and testing for head impact for ECE17/21 crash regulation verified by testing regime by Centurion and Mercedes. Compliant mechanism design for plastic buttons and locking mechanisms.

BENTLEY (MULLINER) FLYING SPUR

- New Kinematic Mechanism development (development of 5 different patent concepts) for manual and motor driven table entertainment system. Development of technical specifications with client team using DFMEA function tree and boundary diagram requirements. Kinematic analysis using multibody dynamics analysis (Catia) also required for assembly and ergonomics / space studies • liaised with the client styling team for the assembly setup (Catia). Initial DFMA development of prototype components/ sourcing of components with mechanism suppliers. 2 prototypes evaluated at Bentley.

ENGINEERING TOOLS

PRO/E CREO: 10K+ hrs
CATIA V5 (2016): 10K+ hrs
Siemens NX 12 2K+ hrs
SOLIDWORKS '19:

2K+ hrs

Finite Element Analysis:
ANSYS 19: 10K+ hrs

Comp. Fluid Dynamics:
CFX 4K+ Hrs /

CFDesign

Dynamic Nonlinear Analysis:
ANSYS LS-DYNA

AUTOMOTIVE

Ayton Willow Ltd – Cambridge, UK ***Nov. 2010 – Dec. 2014***
DIRECTOR & CEO

Founded Ayton Willow Ltd which was spun off into Ithacafield Pvt Ltd in Pakistan in September 2012. Employed 17 permanent staff and 16 on a Dynamic Flat Tier Coordination system allowing dynamically available high end (PhD level) networked human resource of researchers, designers and developers through collaborative projects cutting overheads using university computing and hardware recourses. The company also developed remote team management for an Integrated design and development team in Asia at Ithacafield and a high level concept and development team in Europe at Ayton Willow and a 3 tier collaboration network: Tier 1) Research & Development, Tier 2) Prototyping & Manufacturing, Tier 3) Professional services management

PROJECTS AND ACHIEVEMENTS

- **EU FP7 Projects:** Coordinator and developer of EU FP7 project "vFEATHER": Masterminded the project proposal, technical steering committee, management committee, created the financial & business plans, orchestrated 8 organisations in the consortium and the European commission (DENSO GER, Cranfield University, Kings College London, Tuk Tuk Factory NDL, and TUHH GER). The main goal was the creation of a prototype Electric LDV with 35% increase in efficiency and reduction in running costs. A completely modular frame design would be a revolutionary idea for the UK automotive market that is on the verge of revival through new ideas alone. Performed the structural static and dynamic development to create a complete vehicle integration layout and safety, and dynamics control with varying structure matrix concepts. Also performed Fluid Dynamics analysis for shape change of the vehicle through 3D CFD pioneering vehicle dynamics (handling / ride and control) using modular actuation systems for a live vehicle concept
- **Industrial Vehicle Commercialisation:** Successful commercial Launch of the ECOVOLVE industrial vehicles: Spearheaded project development, creation of the concept of the vehicle through the market niche development, sales forecasts, geographical locations etc. Liaison with Dublin City University, & ECOVolve (ROI)
- **Commercial vehicle development:** with patents and copyrights (EU & Asia) for several vehicles including a 140Bhp Electric motorcycle and 2 niche cars heading the project and concept development, authoring the financial and project plan development including technical marketing and sales plan and the development of

Concept & Prototyping

Electric Vehicle Powertrains

Spaceframe design

Hybrid composite monocoque

Vehicle Dynamics Analysis

Class A & Freestyle Surfacing

Complete vehicle Packaging

Vehicle Interiors & Ergonomics

FSAE Racing teams: 1998 & 1999 (Cornell Engineering)

PREVIOUS WORK EXPERIENCE

SCCA PRO-SPEC Series Racing, ITHACA, NY, USA: Design Engineer: 1999-2000

TAGA (Spain) Pakistan: Production Engineer: Jan 1997-Jul 1997

LAMES S.a.s, Chiavari, Italy: Project Engineer: Mar 1996-Nov 1996

a manufacturing consortium agreement with Omar-Jibran Engineering, Adam Motor Company, and Polycon industries.

- **Solar Technology infrastructure:** Developed a complete solar technology infrastructure for Ithacafield ltd which now is the company's main focus other than development of outsourcing resources.

Dublin City University – Dublin Ireland ***Jan. 2009 – Nov. 2010***
POST DOCTORATE RESEARCHER

Responsible for the research, mathematical modelling, concept, product and process design for ultra-high precision machines for cell rupture, medical devices, large-scale systems for bioenergy, wind turbines, and commercial hospital blowers

PROJECTS

- **Feasibility Report [County Laois Funded]:** this 170 page document was created to layout market requirements and specifications of eco-friendly electric industrial vehicles based on specific niche market needs which have yet not been covered by any European or international company. This led to the Ecovolve project carried out by Ayton Willow
- **Rooftop Wind Turbine** This innovation voucher dealt with the development and validation of a new design concepts of efficient wind turbines that function better in places where the requirement is for small surface areas (such as rooftops of buildings etc.) This project involved the computation Fluid dynamics analysis of the concepts and developing newer designs that would increase the efficiency of the design to be up to 80% efficient. (Have design Rights)
- **Hospital bed blower concept** This innovation voucher examined the feasibility of developing a blower system for use in hospital environments, which required the use of smaller silent systems with the same or comparable specifications of mass flow rate and pressure. The project created a blower which is 30% smaller (by volume),
- **CELRUPT:** The project involved the redesign an APV homogeniser (CAD development) and the development of a sequence of experiments for homogenisation and protein analyses to determine the yield of protein from cell disruption of yeast. The results show a significant increase in yield (120% from what the homogeniser started from) and will lead to a significant results papers and a patent of the technology. Also developed a CFD model to analyse the flow through the homogeniser geometry to compare with experimental results to determine the pressure drop vs. gap size. Our results will present a breakthrough concept of cell disruption in response to suggestions in previous journals. (have design rights)
- **BIOWELL:** My part in the project was to modify a mechanical machine for pre-treatment of maize silage before its anaerobic digestion to produce methane. The design dealt with fluid flow and reduction of bubble due to trapped gasses by introducing mechanical disruption and the mechanical cutting. The BIOWELL project has shown a successful (up to 28%) rise in yield of biogas from anaerobic digestion. Currently this method (and the modified machine) is being patented and will be modified for pre-treatment of macro-algae.

PMAR LAB, Genova, Italy ***Aug. 2004 to Dec. 2008***
POST DOCTORATE RESEARCH ENGINEER & PHD CANDIDATE

Research Projects Development: Developed and authored over 12 research and development proposals (of which 6 were successful) for vehicle development, robotics, manufacturing process etc. This included authoring the technical content including the concept development and idea, the complete work package commercial viability and applications, development of partner consortium network, assigning and managing resource responsibilities & financing. This also required liaising with funding sources (Banca Carige foundation, The EU DG of research), clients such as Fincantieri, Centro Richerca Fiat, Zenga & Bombardier and development groups such as the Italian institute of Robotics, EURON, SIRI.

Robotics Roadmap & Future Direction: I also developed an Italian robotics roadmap for the next 10-15 years for EURON which included a structure for the development of SMEs with research institutes and industries & intelligent personal care systems

- PICAV: A concept of a Personal Intelligent City Accessible Vehicle that is able to access pedestrian zones especially for the disabled and the elderly was granted upon concepts that I developed and presented. I will be patent holder on the design of a frame-suspension system and adaptable seat sub-assembly, both which are significant innovative designs useful for commercial applications. Also wrote the proposal for funding from CARIGE Bank Foundation which was accepted for 2 years funding for one post doctorate researcher.
- SMARTFLEX Worked on the simulation, magnetostatic analysis through FEM analysis (Ansys and workbench including validation of the use of workbench and importing geometry in workbench from ProE) of the effect electromagnetic field on spot welding techniques for manufacturing. Assisted in the writing of the proposal (passed) coordinated by DIMEC, University of Genova.
- PhD Thesis: Unmanned Aerial Vehicles: Mechatronic Design and Control Applications to Traditional and Disseminative Unmanned Aerial Systems: A totally new concept, the Disseminative Multi-layered UAVs (DMUAS) presented for the first time. The idea is to have a UAV that can disseminate (breakup) into different configurations to extend the capabilities towards a multi-range/scenario-based UAV. An example of the DMUAS, the Aquila, is presented based on a flying wing concept. A hypothesis is made on the structural design of the aircraft based on varying (compliant) aerofoil design to maintain flight stability within the different states of dissemination of the Aquila. Work was carried out to show the methodology of design of these requirements with FEA validation, and then final aerodynamic simulations and test flights are used to verify that hypothesis.
- Tecmar Towfish project (UUV)TECMR Liguria Project: Concept design for a 5-axis underwater vehicle towed by a towline. Carried out the Hydrodynamics, CFD analysis, buoyancy and intrinsic stability analysis with damping effects, ProE model, Workshop drawings, and production. The model was prototyped and tested in Rome in 2007.
- Armilleye: The Armilleye is a parallel mechanism developed within the laboratory by M. Zoppi and R. Molfino for a first of its kind pan-tilt configuration for stereo imagery (instead of the usual tilt pan configurations). My part was the Pro E design of the links and actuator placement, dynamic analysis, engineering drawings, construction of working model. The working model was exhibited in Humanoids 06 in Genova.

AEDESIGN GmbH Frankfurt Germany / Pakistan ***Oct. 2002 – Jan. 2005***
DIRECTOR & CTO TECHNICAL

Co-founder of an automobile and engineering design company based around indigenous and outsourcing design projects as well as outsourced design and analysis projects from OEM manufacturers. As the director of the design house with 22 Engineers and draftsmen with Master's and Bachelor's degree qualifications, I was also responsible for the management group & manufacturing outsourcing from Germany to China and Pakistan.

PROJECTS:

- ADAM REVO: the development of the first car based in Pakistan (Project lead for vehicle development and liaison between Adam motor company and Aedesign),
- AEX: a two-seater roadster developed for Karakoram Motor Company
- Two specification flight tested unmanned aerial vehicles and drones.
- The development of a parabolic solar tracking system with a Stirling engine was patented in 2011 and has been deployed in Sweden and Dubai.

LANGUAGES

English Italian Urdu

COMPETITIVE SPORTS

Cambridgeshire County cricket board: Play for Maddingly Cricket Club 2012-2019 (Captain 2019)

MANAGEMENT TOOLS

Microsoft Project, TRELLO, ASANA, SAP

SAGE, OFFICE, C++

- Outsourcing Projects: Currently the company's main concentration is outsourcing design and analysis work from Europe which is running a group of over 40 engineers and draftsmen

NESCOM Design house ***Oct. 2000 to Oct. 2002***
TECHNICAL MANAGER (GROUP LEADER)

Lead designer and manager of 20 designers and draftsmen for the design and fabrication of high-tech mechanical systems, components, and major assemblies.

PROJECTS:

- Vibration isolation development of the REV (Return Entry Vehicle) unit of a long-range multistage rocket reducing amplitude from 13G down to 2G. Development of the separation mechanism ring for the stages to prevent stability issues.
- Structural chassis design & vehicle dynamics of a benchmarked 45-ton 12-wheeler mobile delivery vehicle with 6 wheel steering
- Design of Ultra-high precision revolving fuel distributor
- Stationary jet inlet nozzle for training aircrafts

ERDC Design house ***Mar. 2000 to Oct. 2002***
BUSINESS DEVELOPMENT MANAGER

- Developed ERDC with the Managing director as a private limited company to work on commercialization projects that were of a non-strategic nature.
- The focus of our work was based around strategic management and marketing. Business development and the creation of an engineering design approach with outsourcing. The main design and manufacturing work is done by NDC and if required with its sister organizations in NESCOM.
- Most work was outsourced to ERDC from England in the form of design and analysis projects. Other projects included development into composite frames and structures for local automobile companies as well as complex analysis for components and contact problems.