DR. MUHAMMAD SHOAIB NASEEM

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	All	Since 2020
Citations	170	140
h-index	8	8
i10-index	7	6

EDUCATIONAL BACKGROUND

University	*Degree title*	*Duration*		*Description*
		Start	*End*	
KAIST (DAEJEON, SOUTH KOREA)	**Doctor of Philosophy** in AEROSPACE ENGINEERING.	March 2015	August 2017	Completed doctoral degree from **KAIST South Korea**. **Research**: Synthesis of hypergolic gel bipropellant. Design and development of propulsion system for ethanol gel and Rocket Grade peroxide.
BUAA (BEIJING, CHINA)	**Master of AEROSPACE** PROPULSION ENGINEERING.	March 2011	July 2013	Completed master's from **Beijing University of Aeronautics and Astronautics** (BUAA). Awarded ***Beijing Municipal scholarship***. Research conducted on ammonium dinitramide Oxidizer for Gas Phase decomposition under extreme pressure for solid fuels combustion.
AIR UNIVERSITY (ISLAMABAD, PAKISTAN)	**Bachelor** of MECHATRONICS ENGINEERING.	September 2004	August 2008	Achieved GPA of ***3.91/4, Gold medalist, Deans High Honor Award, First position for final year engineering Project***. Developed CNC Nibbling Machine with PID control algorithm using AVR At-mega microcontroller & human machine interface.

EXPERIENCE

University/ Industry	*Duration*		*Title*	*Description*
	Start	*End*		
COMSATS UNIVERSITY ISLAMABAD, (ACREDATION: WASHINGTION ACCORD)	MAY 2018	PRESENT	**ASSISTANT PROFESSOR**	**Undergraduate Courses:** • Workshop technology • Engineering Mechanics Statics • Engineering Mechanics Dynamics. • Measurement and Instrumentation for Mechanical Engineers • Manufacturing Processes • Controls • Robotics • CAD/CAM • Finite Element Analysis • Computational Fluid Dynamics **Graduate Level Courses:** • Advanced manufacturing • Advanced CAD/CAM • Advanced Engineering Dynamics • Rocket propulsion • Advanced Computational Fluid Mechanics **Research and Development** • Working on Combustion controls of advanced thruster. • Synthesis of Composite Solid fuel for aerospace application • Multi rotor controls flight dynamics and structural optimization.

GULAM ISHAQ KHAN INSTITUTE OF TECHNOLOGY (ACREDATION: ABET)	AUGUST 2013	FEBRUARY 2015	**LECTURER**	**Undergraduate Courses:** • Engineering Mechanics Statics • Engineering Mechanics Dynamics. • Measurement and Instrumentation for Mechanical Engineers • Thermodynamics I & II **Research** Worked on supersonic wind tunnel, sub sonic wind tunnel did research on aero foils for aerospace application.
MUGHAL ENGINEERS & TRADERS	SEPTEMBER 2008	FEBRUARY 2011	**DESIGN & PRODUCTION ENGINEER**	Worked with sheet metal on the production of numerous enclosures related to Power, Communication, and storage units. Worked on Bending Machine, Powder coating, galvanizing and other surface treatment. Also worked on die designing for production press.

PUBLICATIONS

JOURNALS

#	*Publication Details*	*Impact factor*	*Web Link*	*HEC (Category)*
1	**"Experimental and numerical assessment of additively manufactured Cross-Flow Turbine blades for electricity generation under emergency situations".** *Energy Conversion and Management: X* ,Mujahid Naseem, Shoaib Naseem	7.1	1st Revision	***W***
2	**"Design and development of drop weight impact tester for different shape impactors for materials characterization at low strain rate"** *Journal of space safety engineering,*	1.6	1st Revision	***W***
3	**"Design and Optimization of a Blended Wing Body UAV Using AI-Driven Surrogate Modeling and CFD Analysis"** *IEEE*, **Dr. Muhammad Shoaib Naseem**, Muhammad Uns Haider Shah, Muhammad Nasih Ul Hassan, Rimsha Zubair, Ayman Afzal, Dr. Shakeel Afzal, Mujahid Naseem	Scopus	Accepted	***Y***
4	**Tribological and microstructural enhancement of engine oil using reduced graphene oxide and nano-graphite additives**. SAE International Journal of Materials and Manufacturing. Channar, Engr. Hassan & **Naseem, Muhammad** & Ullah, Barkat & Khalid, Engr Hammad. (2025). 35-47. 10.5281/zenodo.15766837. **(2025)**	Scopus	DOI:10.5281/zenodo.15766837	***Y***
5	"**Analysis of Dry and Cryogenic Drilling on Hole Quality in AA2024-T6 using HSS and HSS-Co Tools**" Journal of King Saud University – Engineering Science (JKSE-D-25-00157R1) Atif Sikandar, Barkat Ullah; **Muhammad Shoaib Naseem;** Hassan Raza Channar; Muhammad Aslam **(2025)**	Scopus	https://doi.org/10.1007/s44444-025-00018-6	***Y***
6	**"Investigating mechanical properties of composites reinforced with jute/cotton natural fibers in hybridized epoxy/vinylester and epoxy/polyester resins"** Hammad Ahmad, Muhammad Hamza Abid, Eddie Gazo-Hanna, Atta Ur Rehman Shah, Imran Sajid Shahid Ghumman, Saad Arif, **Muhammad Shoaib Naseem**, Hafiz Muhammad Zohaib **(2024)**	4.8	https://doi.org/10.1002/pc.29565	***W***
7	**"Mechanical properties and microstructural investigation of AA2024-T6 reinforced with Al2O3 and SiC metal matrix composites."** Hassan Raza Channar, Barkat Ullah, **Muhammad Shoaib Naseem**, Javed Akhter, Muhammad Aamir, Arshad Mehmood **(2024)**	2.4	https://doi.org/10.3390/eng5040157	***W***
8	**"Enhancing properties of jute/starch bio-composite material through incorporation of magnesium carbonate hydroxide pentahydrate: A sustainable approach"** A Zulfiqar, MS Khalil, MM Azad, Y Zulfiqar, **MS Naseem**, JI Song Materials Chemistry and Physics, 128690 **(2024)**	4.6	https://doi.org/10.1016/j.matchemphys.2023.128690	***W***
9	**"Effect of rice husk and wood flour on the structural, mechanical, and fire-retardant characteristics of recycled high-density polyethylene"** AUR Shah, A Jalil, A Sadiq, M Alzaid**, MS Naseem**, R Alanazi, S Alanazi, ... Polymers 15 (19), 4031 **(2023)**	5	https://doi.org/10.3390/polym15194031	***W***

10	"**Investigation of blade design parameters for performance improvement of hydraulic cross flow turbine**" Mujahid Naseem , Arslan Saleem , **Muhammad Shoaib Naseem** Ocean Engineering, ISSN: 0029-8018, Vol: 257, Page: 111663, (**2022)**	4.372	https://doi.org/10.1016/j.oceaneng.2022.111663	***W***
11	**"Preliminary Assessment of Hydrogen Peroxide Gel as an Oxidizer in a Catalyst Ignited Hybrid Thruster"** Jeongmoo Huh, Botchu, V.S. Jyoti, Yongtae Yun, **M. N.Shoaib**, and Sejin KwonvInternational Journal of Aerospace Engineering Volume **2018**, Article ID 5630587, 14 pages	1.4	https://doi.org/10.1155/2018/5630587	***W***
12	"**Effect of Alcohol Carbon Chain on Enthalpy and Delay Time of Gelled Hypergolic Propellant System**" **M.S.Naseem***, B.V.S.Jyoti*, and S.W.Baek, (* *Equal Authorship*) *Propellants, Explosives, Pyrotechnics*, **2018**, 43, 453–460,	2.134	https://onlinelibrary.wiley.com/doi/epdf/10.1002/prep.201700268	***W***
13	**"Hypergolic Studies of Ethanol Based Gelled Bi-Propellant System for Propulsion Application" M.S.Naseem*,** B.V.S.Jyoti*, S.W.Baek, H.J.Lee, and S.J.Cho, *Propellants, Explosives, Pyrotechnics*, Vol. 42, pp. 1-8, **March, 2017**.	2.134	https://onlinelibrary.wiley.com/doi/full/10.1002/prep.201700046	***W***
14	**"Hypergolicity and Ignition Delay Study of Gelled Ethanolamine Fuel" M.S.Naseem***,B.V.S.Jyoti*, S.W.Baek, H.J.Lee, and S.J.Cho, *Combustion and Flame,* Vol. 183, pp. 102-112, **May, 2017**.	4.494	https://www.sciencedirect.com/science/article/pii/S0010218017301748	***W***
15	**"Hypergolicity and Ignition Delay Study of Pure and Energized Ethanol Gel Fuel with Hydrogen Peroxide"** B.V.S.Jyoti, **Muhammad Shoaib Naseem,** and S.W.Baek, *Combustion and Flame,* Vol. 176, pp. 318-325, **February, 2017**.	4.494	https://www.sciencedirect.com/science/article/pii/S0010218016303601	***W***
16	"**An Aero-thermodynamic and Mass Model Integrated Optimization Framework for Highly-Integrated Fore-body-Inlet Configurations**" SAROSH Ali, YUN-FENG Dong, **SHOAIB Muhammad**, Applied Mechanics and Materials Vol. 245 pp 277-282, **2013**. DOI: 10.4028/www.scientific.net/AMM.245.277	Scopus	https://www.scientific.net/AMM.245.277	***Y***

INTERNATIONAL CONFERENCES

#	*Publication Details*
1	**"Design and Optimization of a Blended Wing Body UAV Using AI-Driven Surrogate Modeling and CFD Analysis" Dr. Muhammad Shoaib Naseem**, Muhammad Uns Haider Shah, Muhammad Nasih Ul Hassan, Rimsha Zubair, Ayman Afzal, Dr. Shakeel Afzal, Mujahid Naseem, IBCAST 2025. Muree, Islamabad
2	**"SIO2 ENRICHED LUBRICANT OIL FOR REDUCED FRICTIONAL RESPONSE IN SLIDING TRIBO-PAIRS"** Muhammad Umer, Ali Usman, Waqas Ahmed, Arslan Ahmed, ISS Ghmuan, and **Shoaib Naseem** Proceedings of ICEESEN2022, 1-3 September 2022, Kayseri-Turkiye
3	"**Green Gel Hypergolic Propulsion System for Space Application**" **Muhammad Shoaib Naseem***, B.V.S.Jyoti*, Dong Gi Lee, Seung Wook Baek, International Conference of Mechanical and Aerospace Engineering (ICMAE-2017), Pune, India, August 2017. (* *Equal Authorship*)
4	**"Experimental Studies of Gel Fuel for Propulsion System"** **M.S.Naseem**, B.V.S.Jyoti, and S.W.Baek,The 2016 Asia-Pacific International Symposium on Aerospace Technology (APISAT2016), Toyama, Japan, October, 25-27, 2016.
5	**"Effect of Electrostatic Voltage on Combustion of Propane Diffusion Flame"** B.V.S.Jyoti, S.M.Kim, M.S.Naseem, S.W.Baek, Y.C.Ghim, and Dimitrios.C.Kyritsis, International Conference on Engineering, Technology, and Applied Science-Fall (ICTEA 2016 Fall), Seoul, South Korea, November 7-9, 2016.
6	"**GAS Phase Decomposition of Ammonium Dinitramide at 03MPa and 0.6MPa**" Muhammad Shoaib Naseem and WANG Changhui, SMEP-AMEC 2014 Lahore.

PATENTS

#	*Title*	*Patent Registration No. / Application No.*	*Web site*
1	GEL FUEL INJECTION TEST SYSTEM (젤화 연료 분사 시험 시스템)	1019268420000 / 10-2017-0089593	http://engpat.kipris.or.kr/engpat/searchLogina.do?next=MainSearch
2	HIGH PRECISION DESIGN FOR GEL FUEL INJECTION SYSTEM	1019267220000/ 10-2017-0071760	

(젤화 연료 분사 시험 시스템)

RESEARCH PROJECTS

GOVERNEMENT/INDUSTRIDAL FUNDS

Duration	*Project Title*	*Status*
1 Year (2024-25)	**"Urban Flight Path Planning using AI"** Funded by ImachE	Completed
1 Year (2023-24)	"**Blended Wing VTOL agricultural drone optimizing flight time for efficient productivity and police use for tear gas shelling**" Funded by IGNITE	Completed
1 Year (2023-24)	"**Cyclone Spray Dehydrator for Saturated crystals**" Funded by IGNITE	Completed
1 Year (2023-24)	"**Synthesis of synthetic rubber**" Funded by IGNITE	Completed
1 Year (2023-24)	"**Design and development of the high power wideband multi mode underwater acoustic Transducer**" Funded by IGNITE	Completed
1 Year (2023-24)	**"Cyclone Spray Dehydrator for Saturated crystals**" Funded by IGNITE	Completed
1 Year (2024-25)	**"Urban Flight Path Planning using AI"** Funded by ImachE	Completed
1 Year (2023-24)	**"Design Analysis and Fabrication Of Artificial Bio Implant**" Funded by IGNITE	Completed
1 Year (2023-24)	"**Design and fabrication of Unmanned Ground Vehicle**" Funded by IGNITE	Completed
3 Year (2022-2024)	PAK-UK Mobility Grant Funded by British Council and Pakistan Higher Education Commission	Completed
1 Year (2019-2020)	Government awarded project. Awarded by higher education commission Pakistan, "**Gel propellant synthesis for aerospace application**".	Completed
1 Year (2019-2020)	COMSATS grant on **Gel fuel injection system for aerospace application**	Completed
3 Years (2015-2017)	***Under KFR Fellowship*** Formulation, Rheological characterization of gel propellant, Hypergolic Studies of the formulated gel propellant, Injector studies for the gel propellant, Gel Thruster design, fabrication and test for gel propellants, Gel Rocket Engine test bench designing fabrication, instrumentation & controls of the test bench.	Completed
2 Years (2011-2013)	***Under Beijing Municipal Scholarship*** • Simulation of De-Laval nozzle in **ANSYS 13.0/Fluent** • Thermo-chemistry properties for combustion product of Ammonium Dinitramide (ADN) using **GAUSSIAN (Gauss View 5)** • Flame speed analysis of Ammonium Dinitramide using **CHEMKIN Pro** Stress analysis of Star grain using **Solid Works** and **ANSYS 13.0**	Completed
2 Years (2008-2010)	***Industrial Project Funded by Mughal Engineering & Traders*** • Complete operations and erection of electroplating plant for galvanizing. • Re-evaluation of Powder coating chemical treatment to achieve better phosphate layer, in-order to get excellent adhesion of paint.	Completed
2 Years (2006-2008)	***Self-Funded During Final Year Engineering*** • Design and manufacturing of Computerized Numeric Control (CNC), Nibbling machine, using DC motors for positioning, applied PID control algorithm on ATMEL At-mega microcontroller. • Mecanum wheels based vehicle fabrication, design and control for automated mass storage sheds. • Interfacing microcontroller with numerous sensors and electromechanical actuator (Atmel, Micro-Chip, thermocouples, thermistor, rotary encoder, Gyroscope, stepper motor, DC servos, load Cell, etc.)	Completed

GRADUATE RESEARCH PROJECTS (SUPERVISOR)

#	Student Name	Thesis Title	MS/PhD	Supervisor / Co-Supervisor	Status: Registered / Completed
1	Muhammad Talha	Development of a versatile rocket engine test stand for static evaluation of conventional and non-conventional propellants	PhD	Supervisor	Registered
2	Umar Hayat	Yet to be not finalized	PhD	Co-Supervisor	Registered
3	Hamza Javed	Development And Characterization Of Bio Resin Synthesized From Citric Acid And Glycerol Reinforced With Rice Husk- A Suitable Approach	MS	Co-Supervisor	Completed
4	Hamza Shafique	Optimization Of FDM Parameters For Enhanced Mechanical Properties Of Additively Manufactured Acrylonitrile Styrene Acrylate	MS	Co-Supervisor	Completed
5	Talha	High-Pressure Gas-Powered Propulsion System Design For Attitude Controls.	MS	Supervisor	Completed
6	Mohsin	Stochastic Analysis And Optimization Of Dual Bell Nozzle For Hypersonic Gas Flows	MS	Supervisor	Completed
7	Umar Hayat	Investigating The Effect Of Mustard Husk (MH) On The Mechanical And Thermal Properties Of Thermoplastic Starch-A Sustainable Approach	MS	Co-Supervisor	Completed
8	Ahsan	Air Bearing Design and Optimization	MS	Supervisor	Completed
9	Hassan Raza Channar	Development and Characterization of Aluminium Metal Matrix Composites using Al2O3 and SiC as Reinforcement Element	MS	Co-Supervisor	Completed
10	Muhammad Waqas	Nanoparticle based modification of lubrication oil for improved frictional response in sliding tribo-pairs.	MS	Supervisor	Completed
11	Muhammad Hafiz Umar	Development of Reduced Graphene Oxide Enriched Lubricant oil and generation of Data for ANN Training	MS	Supervisor	Completed
12	Umair Rauf	Optimization of Turbo Pump Impeller, Design and Experimentation Analysis	MS	Supervisor	Completed

UNDERGRADUATE FINAL YEAR DESIGN ENGINEERING PROJECTS (SUPERVISOR)

Sr No.	Project Title	Description	Status
1	Autonomous Forklift Vehicle Using Meccanum Wheels	Using Meccanum Wheels to construct a forklift for large facility storage units. This machine was to place objects in their location as allocated by the management into the shelfs without occupying huge space for turning and rotating. These movement can be achieved by these special wheels.	Completed
2	Design and Stability of Co-Axial Y Multirotor	Using Standard Y frame of co-axial multirotor, a stabilization platform was developed using At-Mega controller to perform rapid maneuvering	Completed
3	Becnch top Three Axis CNC Milling machine	Using stepper motors for all three-axis motion control and a 5KW spindle for cutting soft metals like aluminum, brass, copper and mild steel. The system was interfaced directly to the laptop via interface card (MACH3).	Completed
4	Fire Fighting Drone using Hexa-multirotor co-axial system.	Using fire extinguisher ball to be dropped at fire concentrated location where human access is not practical. The multirotor was designed to handle two of these balls and to be able to hold load 12 rotor were used co-axially attached to a hexacopter frame.	Completed
5	Design and Fabrication of De-Laval Nozzle	Using standard governing equation for bell nozzle contour. A thruster was designed and manufactured for a small rocket propulsion system.	Completed
6	Design and Fabrication of Mini Sugar Mill	Designing of a small-scale sugar manufacturing plant for cottage industry.	Completed
7	Linear Motor Fabrication for linear motion controls	Linear motors are an interesting concept of motion controls. A DC linear motor was fabricated with a functioning length of approximate length of 1000mm. Permanent magnet on	Completed

		either side of with copper winding aligned axially caused motion along the sliding rail.	
8	Car for Shell Marathon Competition	An EFI based 47cc four stroke engine was utilized on an aluminium frame for a single person to achieve long distance approximating 200km per litter.	Completed
9	Electric Bike	Desigen and fabricated an electric bike for inter campus transportation.	Completed
10	Cyclone Dust Collector	With agriculture setup the thresher sends the husk and associated dust in air. This set up collected the husk and dust at single location which was collected for further utilization.	Completed
11	Biogas Plant for power generation.	Using cow manure to generate methane for power generation.	Completed
12	Three Point Roller Mill, Cold Roll forming	Design and Fabrication a roller mill to cold form steel strip into a ribbon for mixtures used in chemical process industries.	Completed
13	Hammer Mill Fabrication	The fabrication of hammer mill was to convert waste glass bottles into sand for commercial applications.	Completed
14	High Energy Ball Mill	The designing and fabrication of high energy ball mill was to manufacture nanoparticles for additive manufacturing and powder metallurgy.	Completed
15	Cross Flow Hydro turbine	Using additive manufacturing different blade profile of cross flow turbine were manufactured for low head, power generation.	Completed
16	Pulverized coal, controlled Ignition System	Using standard grinding methods char coal was converted to powder which was send into an ignition system with air flow to study ignition energy required and maintain combustion for power generation.	Completed
17	AI based path planning for UGVs	Using Python for raspberry pi for image processing and standard Arduino platform for dc motor controls the UGV constructed using additive manufacturing was able to generate its own path to avoid obstacles in a terrain.	Completed
18	Blended Body Wing for Drones	A delta wing configuration with two NACA profile were blended to form a high performing glider which require minimal thrust. The designed wing was simulated on ANSYS Fluent, then tested in wind tunnel and then fabricated using composites for long duration flight.	Completed
19	Rubber Synthesis from Ethanol	Using 90% pure ethanol passing it through catalytic bed at 450^{o}C and allowing it to stay for a prolong duration for the reaction to take place. The reaction resulted in polymerization a reasonable quantity of polybutadiene was observed.	Completed
20	Vertical Wind Turbine	Developed a composite blade for vertical tube which was able to produce 300W of energy.	Completed
21	Topological optimization of hex multirotor arms	Using ANSYS for structural optimization regarding the hexacopter which resulted in a 90% reduced frame weight which was able to handle the mounted equipment with ease.	Completed
22	Fabrication of High Energy Under Water Ultrasonic Transducer	Using Piezo crystals a high frequency ultrasonic sensor was designed for under water applications	Completed
23	VTOL of BWB Drone	Using Ansys for simulation and SolidWorks for designing the Project in to indigenously manufacture a VTOL quadcopter with Blended winged body for low altitude flight	Completed
24	Axial Flux Motor Design and Fabrication	Using DOE method to collect the data for the parametric analysis and determine which functions cause significant change to the system performance. Derived from the data basic model will be constructed which will further optimize the motor using ANSYS Maxwell and finally an Axial flux motor will be fabricated	Completed
25	Spray Dryer design and fabrication for Sugar solutions	The complication with sugar mills is the boiler for the sugar solution. This project is to remove the requirement of high-pressure boiler instead using hot air to remove moisture around the crystalline molecule make it solid as it falls to the bottom under gravity.	Completed
26	Design and Fabrication of Ionic Thruster for aerospace propulsion application	Design and Development of an ionic propulsion system for UAV with a Blended Wing Body structure for long term flight.	Completed

27	Design and Development of Pyrolysis Plant	Using Plastic, and rubber waste currently filling massive landfills in Pakistan to generate fuel for power generation.	Registered
28	Development of IONIC batteries for Automotive	Using waste or damaged lithium batteries to recycle them and use stable catalyst derived from sodium salt for improved stability.	Registered
29	Design and surface optimization of blended winged body for UAV	Using AI to optimize the Numerous NACA profile for BWB to be utilized for UAV with minimalistic propulsion power.	Registered
30	Urban Flight planning Using AI via Jetson-Nano	Using jetson nano for image processing and YOLOv5 for path planning to move within the cities to avoid collision with the building.	Registered
31	Turbo pump impeller design Using AI	Using advanced llamas AI model for turbo pump impeller blade optimization to achieve high pressure	Registered
32	Advanced ceramic based lost wax casting	Using additive manufacturing to print the part and adequate ceramic coating for casting	Registered
33	AI integrated flight control for collision avoidance and object detection	Using Jetson Orin for AI assisted flight planning and collision avoidance for urban personal flight vehicles	Registered
34	High Energy Ball Mill for nano Particle synthesis	Using the mill to synthesize nano metal particles for commercial application, in aerospace, biomedical	Registered
35	Indigenous development of Reaper Type drone for load bearing	With advancement in aerial reconnaissance UAVs are being developed to carry load and long duration flight the proposed project is to meet with the challenges	Registered
36	Evolution of BWB with Y from coaxial multirotor for VTOL	Previous work has been to optimize the BWB for long duration flight and high angle attack for quick take off. Now introducing VTOL to directly take the vehicle to the desired height.	Registered

RESEARCH OBJECTIVES AND DIRECTION

Research in aerospace propulsion and advanced space flight.

1. Aerospace propulsion Major focus on
    a. Liquid and Hybrid Rocket Engines: Stabilizing the liquid fuel/oxidizer in gel state.
    b. Throttle controls for gel bi-propellant hypergolic fuel
    c. Design and development of variable throat nozzles for aerospace application
2. Supersonic Combustion research for hypersonic vehicles
3. Throttle control via injection system, Spin control and nose control for sounding rocket
4. UAVs surface optimization for long range flights with minimalistic propulsion power

SKILLS/SOFTWARES

- Synthesis of gel propellant, from Alcohol and Kerosene.
- Synthesis of gel oxidizer using hydrogen peroxide, RFNA, WFNA.
- Synthesis of solid propellant, derivative of cellulose and its nitrates.
- Purification of Hydrogen peroxide to High concentration (90%)
- Worked on FDM and DLP 3D printers.
- working with Hex-copter & quadcopter, flight controller: APM & PIXHAWK.
- Composite structure fabrication using carbon fiber, Kevlar.
- Additive manufacturing for custom design for UAVs
- Worked on Wind tunnels Subsonic & Supersonic (GIKI)
- Worked on Hypersonic shock tube (KAIST, during PhD)
- High Speed Camera, Photon SAX2 (KAIST, During PhD)
- Working on Microcontrollers modules (Arduino). Also utilizing Raspberry Pi for sensor attachments, data acquisition.
- Expertise in machine tools shop and CNC Tooling
- SOLIDWORKS (CAD)
- ANSYS (Fluent, CHEMKIN Pro, Turbo Grid, Turbo Gen)

- GUSSIAN (Gauss View 5.0) (Computational Chemistry)
- MATLAB
- Python (Pi programming and Image processing regarding Jetson nano)
- Program Microcontrollers on BASCOM AVR/AVR Studio,
- Program flight controller for Multirotor and UAV applications Via MISSION PLANNER
- MINITAB for Design of Experiment and Stochastic analysis

Please contact for referees.