Kashif Liaqat

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Education

- **Master of Science in Mechanical Engineering (Fulbright Scholar)** — April, 2021
  Florida State University (FSU); CGPA: 3.89/4.0 — *Tallahassee, FL, USA*
  Thesis: *Modeling, Optimization, and Software Development for Concentrated Solar Power (CSP) Plants*
  Relevant Courses: *Energy Conversion, Sustainable Power Generation, Data Analysis, Heat Transfer, Modeling of Power Plants*

- **Bachelor of Science in Mechanical Engineering (Presidential Award, Gold Medalist)** — Oct, 2018
  Balochistan University of Information Technology, Engineering and Management Sciences (BUITEMS); CGPA: 3.92/4.0 — *Quetta, Pakistan*

Experience

- **Alliance for Sustainable Energy, National Renewable Energy Laboratory (NREL)** — Jun, 2020 – Dec, 2020
  Graduate Intern - Thermal Optimization (Full-time) — *Golden, CO, USA*
  - **Heliostat Aimpoint and Location Optimization Software (HALOS) for Solar Tower Plants**:
    - Implemented methods that characterize the thermal flux image transferred from a mirror to a receiver surface
    - Supported the development of optimization model & case studies to test the optimization model

- **Center for Advanced Power Systems (CAPS)** — Sep 2019 - April 2021
  Graduate Researcher, Thermal Management — *Tallahassee, FL, USA*
  - **Research topics**:
    - Modeling and optimization of concentarted solar power plants
    - Nanofluids for solar thermal power plants
    - Solar radiation forecasting using Machine/Deep learning techniques

- **Balochistan University of IT, Engineering & Management Sciences (BUITEMS)** — Dec 2018 – Aug 2019
  Research Associate (Full-time), Department of Mechanical Engineering — *Quetta, Pakistan*
  - **Efficiency Enhancement of a Concentrated Solar Collector using Nano-Fluids**:
    - Conducted literature review & procured materials for experimental work
    - Setup Lab for experimental part of the project

Undergraduate Internships

- **Zarghun Gas Field, Mari Petroleum Company Limited (MPCL),** — Quetta, Pakistan
  Worked on analysis & pump selection for field's Hot Oil Section - Maintenance Department — *July - Sept, 2018*
- **Department of Mechanical Engineering, BUITEMS** — Quetta, Pakistan
  Contributed in equipment procurement & setup new Labs in the department — *Feb - Mar, 2018*
- **Habibullah Coastal Power Company** — Quetta, Pakistan
  Performed Exergy analysis of combined cycle power plant - Maintenance Department — *Jan - Feb, 2018*
- **Voice of Balochistan, Center for Strategic & Contemporary Research, Pakistan** — Virtual
  Wrote articles on different social/educational aspects/concerns of Balochistan — *June - Aug, 2017*
- **Thermal Power Station (1340 MW)** — Muzaffargarh, Pakistan
  Performed preventive maintenance & Studied daily demand and supply variations — *Jan - Feb, 2017*
- **Millat Tractors Limited** — Lahore, Pakistan
  Rotational Job: Machining unit, Engine Assembly Line, Testing Bed and Performance Evaluation — *Jan - Feb, 2016*

Publications

- **K Liaqat, and J Ordonez, "Resource Assessment, Parametric Optimization, and Cost Evaluation: A Comparative Study of CSP Power Plants For Pakistan"**: Journal of Renewable and Sustainable Energy (Submitted 2021)
- **A Zolan,W Hamilton, K Liaqat, and M Wagner, "A spatial decomposition approach to optimizing aimpoint strategies for commercial-scale concentrating solar power tower plants"**: Solar Energy - Journal (Submitted 2021)
- **K Liaqat, A Zolan, and J Ordonez, "Heliostat Aimpoint Strategy Development for a Central Receiver System Plant in Pakistani Climate"**: SolarPACES (Submitted 2021)
- **K Liaqat, and J Ordonez, "Molten Salt Based Nanofluids for Solar Thermal Power Plant: A Case Study"**: (2021) 8th IEEE Conference on Technologies for Sustainability (SusTech 2021)
- **A Zolan,W Hamilton, K Liaqat, and M Wagner, "Heliostat Aimpoint and Layout Optimization Software"**: (2021) [Online]. Available: github.com/NREL/HALOS
- **K. Liaqat, A. Ali and A. N. Mengal, "Design and Simulation of Molten Salt Based Solar Thermal Power Plant using LFR Technology in Pakistan"** : 2018 International Conference on Computing, Electronic and Electrical Engineering (ICE CUBE), Quetta, 2018. DOI: 10.1109/ICECUBE.2018.8610990
- **K Liaqat, M Anss, A Ali and A Nawaz Mengal "Modeling and Simulation of a 100 MW Concentrated Solar Thermal Power Plant Using Parabolic Trough Collectors in Pakistan"**: 1st International conference on Advances in Engineering Technologies (ICAET-2018), BUITEMS, Quetta, Pakistan. DOI: 10.1088/1757-899X/414/1/01203

Skills Summary

- **Languages**: Python, R, MATLAB
- **Tools**: Git, Microsoft Office Suite, Solidworks, SolidEdge, AutoCAD, Siemens NX, Ansys, Mathematica, System Advisor Model (SAM), NREL PVWatts, GeoSpatial Toolkit, Arduino, Data Analysis
- **Certification**: Python, Microsoft Office Specialist

Projects

- Daily & Hourly Direct Normal Radiation Prediction using Machine Learning: A Case Study Approach
- Design and Optimization of Solar Tower Based Power Plant for Pakistan using System Advisor Model
- Design of Small Scale Photovoltaic (PV) Solar-Powered Water Pump System for Quetta, Pakistan
- Exergy Analysis of Combined Cycle Power Plant (Internship Project)
- Robotics: Bluetooth Controlled two Wheel Drive, Line Following & Obstacle Avoidance Robot, Ultrasonic Radar
- ASTM C78 Flexural Strength of Concrete Fixture Design

Honors, Scholarships and Awards

- Fulbright Scholarship, USA (Aug, 2019 - May, 2021)
- Gold Medal in BS Mechanical Engineering (Oct, 2018)
- Award for excellent yearly academic performance, BS Mechanical Engineering (2016 & 2017)
- National Testing Service, Pakistan - Merit Scholarship (Aug, 2014 - Aug,2018)