

Sana Nazir

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PhD researcher developing high-order, hardware-agnostic, performance-portable CFD solvers in C++/Kokkos.

EDUCATION

PURDUE UNIVERSITY

MSc AERONAUTICS &
ASTRONAUTICS

Dec 2022 | USA

MSc COMPUTER SCIENCE

May 2018 | USA

BSc COMPUTER SCIENCE

Lahore University of
Management Sciences |
PAKISTAN

COURSEWORK

CONCENTRATIONS

Aerodynamics

Propulsion

Compilers

Networks & Operating Systems

ACADEMIC PROJECTS

2024 | Identification of Vortex Stretching Events in Turbulent Channel Flow (JHTDB)

2024 | Hypersonic DSMC Study of Hollow-Cylinder-Flare (SPARTA)

2022 | Hydrogen Powered Micro-Gas-Turbine

2022 | Ultra High Bypass Ratio Geared Turbofan Engine Analysis

2018 | Map Reduce Word Count (C++, OpenMP, MPI)

2017 | GCC Compiler Support for Analyzing Uninitialized Local/Global Variables (C)

2016 | XINU OS Components Including Scheduler & Virtual Memory Support (C)

EXPERIENCE

PURDUE UNIVERSITY | PHD STUDENT | GRADUATE STAFF

- Jan 2023 - present | Teaching Assistant Aeronautics & Astronautics

INTEL | SYSTEMS/ COMPILER ENGINEER

- Aug 2019 - July 2021 | Software Engineer IOTG - Compiler Architecture
- Oct 2018 - Aug 2019 | Software Engineer IAGS - Systems Software
- May 2017 - Aug 2017 | Graduate Software Engineering Intern
- May 2016 - Aug 2016 | Graduate Software Engineering Intern

PURDUE UNIVERSITY | GRADUATE STAFF

20 Hr Graduate Staff positions

- Aug 2024 - Dec 2025 | Lab Instructor Aerodynamics Wind Tunnel Labs
- Jan 2022 - May 2024 | Teaching Assistant Aerodynamics
- Aug 2021 - Dec 2022 | Teaching Assistant Mathematics Department
- Aug 2017 - May 2018 | Lab Instructor Computer Architecture Lab

SELECT PROJECTS

PRESENT - PURDUE | HIGH-ORDER CFD FRAMEWORK IN C++/KOKKOS

Developing hardware-agnostic implementations of explicit and compact finite difference schemes (E1-E6, DE, AC, C4, C6) for structured and curvilinear meshes, targeting multi-architecture scalability (CPU/GPU, OpenMP/CUDA/HIP). "Hardware-Agnostic Compact Difference Schemes in C++/Kokkos for High-Order CFD" AIAA SCITECH 2026.

PRESENT - PURDUE | AEROSPACE SCIENCES LAB | SBLI AT MACH 2.0

Experimental investigations of swept oblique Shock-Wave/Boundary-Layer Interactions (SBLI) at Mach 2.0.

"Swept Oblique Shock/Boundary-Layer Interaction on a Sub-Boundary-Layer Bump" AIAA SCITECH 2025.

PRESENT - PURDUE | PLASMA & ELECTRIC DISCHARGES COURSEBOOK

Co-authoring a comprehensive graduate-level textbook on Plasmas and Electric Discharges.

2019 - INTEL | PLAIDML EXECUTION PROVIDER FOR ONNX RUNTIME

Created the interface to enable ONNX Runtime with PlaidML as the execution provider, by extending the Tile eDSL to include ONNX operations.

2018 - INTEL | MOHAWK RIVER AMBIENT COMPUTE PROTOTYPE

Built a Face Recognition Module utilizing a 360 camera device for a dual-OS shared peripheral system. - Prototype showcased in COMPUTEX 2019.

2016 - INTEL| TELECONFERENCING & iROBOT OBSTACLE AVOIDANCE

A 360 teleconferencing application capable of handling a dynamic environment with automatic speaker detection & an iRobot device with obstacle avoidance capability were created using multiple Intel RealSense Cameras utilizing depth data and computer vision algorithms. - Prototype showcased at Intel DTTC 2017