

Annus Zulfiqar

Education

- 2021–present **PhD in Computer Science (Ross Fellow)**,
Department of Computer Science, Purdue University, West Lafayette, Indiana, USA.
- **Area:** *Programmable Networks, Domain-Specific Architectures*
 - **Advisor:** [Muhammad Shahbaz](#)
- 2015–2019 **Bachelor of Electrical Engineering**,
*School of Electrical Engineering and Computer Science (SEECS),
National University of Sciences and Technology (NUST), Islamabad, Pakistan.*
- **CGPA** – 3.96/4.00
 - **Advisors:** [Muhammad Shahzad](#) and [Faisal Shafait](#)

Experience

Academic Research

- Sep 2021 – Present **Graduate Research Assistant**, *NextGArchitectures Lab, Purdue University*,
Advisor: [Muhammad Shahbaz](#).
- Building architectures for the *slow-path* at the control-plane/data-plane interface in SDN.
 - **Collaborators:** [Ben Pfaff](#) and team.
 - Building an AutoML compiler and applications for ML inference on emerging data planes.
 - **Collaborators:** [Kunle Olukotun](#) and team.
- Sep 2020 – Jan 2021 **Remote Researcher**, *Pervasive Parallelism Laboratory, Stanford University*,
Advisor: [Muhammad Shahbaz](#) (Postdoc Researcher).
- Designed discrete-event network simulations for load balancing techniques.
- Jun – Sep 2018 **Visiting Research Intern**, *Technical University of Kaiserslautern (TUK), Kaiserslautern, Germany*, (DAAD funded project).
- Worked on multi-temporal forest cover change detection to analyze the largest afforestation drive in Pakistan using remote sensing and deep learning.
- Jun 2017 – May 2019 **Research Intern**, [TUKL lab](#), SEECS, NUST,
Advisors: [Faisal Shafait](#), [Dr. Muhammad Shahzad](#).
- Worked on Document Processing and land cover classification problems using object detection and sequence learning techniques from deep learning.

Industry

- May–Aug 2022 **Research Intern**, *VMware Inc., Palo Alto, California, United States*.
Characterized the *slow-path* in the Open vSwitch to find abstractions/primitives to build an architecture for it.
- Jun 2019 – Jul 2021 **Design Engineer**, [Center for Advanced Research in Engineering](#), Islamabad, Pakistan.
Designed Ethernet/Wi-Fi/LTE-capable IoT Sensor Networks for industrial machine sensing and data telemetry.
- Feb–May 2020 **Design Engineer (Part-time)**, *Technology Spirits, Islamabad, Pakistan*.
Designed a Brushless DC Motor Electronic Speed Controller (BLDC-ESC) rated at 88 Amperes of current around the STMicroelectronics STSPIN32F0 controller.

Publications

- ASPLOS'23** Tushar Swamy, Annus Zulfiqar, Muhammad Shahbaz, Luigi Nardi, Kunle Olukotun. *Homunculus: Auto-generating Efficient Data-plane ML Pipelines for Datacenter Networks* | [Draft](#) |
- Under Rev.* Annus Zulfiqar, Gianni Antichi, Ben Pfaff, William Tu, Muhammad Shahbaz. *The Slow-Path Needs an Accelerator Too!*

Tutorials

- Aug 2022 **SIGCOMM**. Tushar Swamy, Annus Zulfiqar, Alex Rucker, Muhammad Shahbaz, Kunle Olukotun. *In-Network Machine Learning using Taurus*. | [Website](#) | [Code](#) |

Talks

- Aug 2022 **VMware**. The Slow Path Needs an Accelerator Too!

Honors and Awards

- Feb 2021 Ross Fellowship (worth USD 231K) recipient at Purdue University.
- Nov 2018 Travel award for EECamp at KAIST, South Korea.
- Sep 2018 Funded internship offer for one year at DFKI, Kaiserslautern, Germany (passed).
- Jun 2018 DAAD-funded internship in Microelectronic Systems Research Group at Technical University of Kaiserslautern (TUK), Kaiserslautern, Germany.
- 2015-2019 NUST merit scholarship recipient.

References

1. **Muhammad Shahbaz (Purdue University)**. mshahbaz@purdue.edu
2. **Gianni Antichi (Politecnico di Milano)**. gianni.antichi@polimi.it
3. **Ben Pfaff (VMware)**. bpfaff@vmware.com