Anuj Vaishnav

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Experience

2017 – 2020 **PhD Researcher,** APT Group, University of Manchester, UK.

- Worked with 4 other researchers for groundbreaking research on modular development flow and resource management for FPGAs. A fast-paced environment where we planned, engineered, evaluated and published research almost every 3 months.
- Responsible as a lead for project management, open-source release, live demos, system design and implementation. The outcome of this is FOS – FPGA Operating System which provides a 100x reduction in development time, 2.34x faster compilation, 20% faster execution and 95% lower waiting times of dynamic workloads compared to commercial tools. (Currently in talks for licensing.)
- Mentored interns and students while also giving talks and demo at various global conferences around the world.

2018 Sept-Nov **Consulting IoT Platform Engineer,** HTV GmbH / University of Manchester, Germany/UK.

- Delivered PetaLinux based IoT platform with remote access for hardware accelerators.
- Developed userspace drivers for cryptography accelerators (AES and Keccak/SHA3).
- Wrote tutorials and documentation for the platform handover.

2016 July-Sept **Hardware Intern – Design & Verification,** ARM, UK.

- Extended verification simulator to support legacy and upcoming AMBA bus protocols.
- Improved existing systems for better functional coverage checking.
- Created a new regression work-flow for lint tool and its continuous integration.
- Reported and resolved bugs in work-flow and verification test-benches.

2015 July-Aug **Summer Research Assistant**, APT Group, University of Manchester, UK.

- Designed a single instruction computer architecture based on data-flow graphs.
- Built a high-level functional and performance modelling simulator in JAVA.
- Summarised findings from experiments, design analysis and literature in technical reports.

Positions of responsibility

2017 – 2020 **Graduate Teaching Assistant** for 5 courses, total 350+ students**,** University of Manchester
2018 Jan - Jun **Part of Organizing** Postgraduate Summer Research Showcase (for 1000+ students)
2015 – 2017 **Secretary** for Manchester Ultimate Programming Society**,** University of Manchester
2015 – 2016 **Organised** research talks for undergraduate students (500+), University of Manchester
2015 – 2016 **Pass Leader**, mentor and learning facilitator for 6 junior students, University of Manchester
2014 – 2016 **Board Member** of School of Computer Science Committee, University of Manchester
2014 – 2015 **Part of Organizing** HackDelhi Hackathon (100+ participants)**,** Delhi, India
2014 – 2015 **Student Representative** for School of Computer Science**,** University of Manchester

Education

2017 – 2020 PhD Computer Science, University of Manchester, UK.

Research Topic: *Modular FPGA Systems with Support for Dynamic Workloads and Virtualisation*.
Supervised by: *Dr. Dirk Koch* and *Dr. James Garside*

Research focus: Built a modular development stack and dynamic runtime system for *elastic* and *scalable deployment* of hardware accelerators in the cloud and at the edge. Full list of 15 publications and citations available on Google Scholar: https://scholar.google.co.uk/citations?user=GIMybIcAAAAJ

2014 – 2017 BEng (Hons) Computer System Engineering, University of Manchester, UK.

First-class degree with *85%* and specialisation in both *software* and *hardware* engineering.

- Final year project: Developed a library of high-performance hardware accelerators for security algorithms with strict resource budget and vector interface.
- Final year modules: Agile Software Engineering, Software Evolution, Compilers, Cryptography and Network Security, Chip Multiprocessors, and Documents on the Web.

Awards*:*

- ***President's Doctoral Scholar Award, University of Manchester – 2017-21***
  Given to the *top 3%* of research students across the university who demonstrate academic excellence and leadership potential.
- ***Runner Up for Outstanding Doctoral Paper in Computer Science, University of Manchester – 2017-18***
  Given to the *second-place winner* across the school for best research paper of the year, based on the external reviews, venue and acceptance rate. For "Live Migration for OpenCL FPGA Accelerators".
- ***Edwards Prize, University of Manchester – 2016-17***
  For the *highest distinction* in examinations, laboratories and projects relating to Computer Engineering courses *throughout the degree*.
- ***IBM Team Challenge Award, University of Manchester – 2015-16***
  For the consistent sterling performance of the *team* on all Software Engineering coursework.
- ***Kate Kneebone Acorn Bursary, University of Manchester – 2015-16***
  For a student with academic merit who has shown commitment, determination, enthusiasm, personal application and promise.
- ***Golden Anniversary Prizes, University of Manchester – 2014-15***
  For Excellence in first-year studies. Given to the *top 5* students of the year

Technical Skills

*Object-oriented lang.***:** Java • Python • Ruby • Matlab
Website development: JavaScript • HTML + CSS • SQL • XSL • JSON
Embedded systems: C • ARM assembly • PetaLinux • Userspace drivers
*Hardware***:** Verilog • High-level simulation • Verification test-bench • Functional coverage
OS & other software: OpenCL • Bash • Tcsh • JUnit Testing • GNU/Linux • Windows • Gitlab