Akhil Raj Baranwal

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EDUCATION

BITS PILANI
B.E. in Electronics and Instrumentation
Expected Aug 2020
Hyderabad, India
Cum. GPA: 7.7

DELHI PUBLIC SCHOOL GHAZIABAD
Higher Secondary, CBSE
Grad. Apr 2015| Ghaziabad, India, 94.8%

LINKS

Github:// akhilrb
LinkedIn:// akhil-raj-baranwal
Twitter:// @akhilrbaranwal

COURSEWORK

Relevant
Computer Architecture
Advanced VLSI Architecture
Microprocessors + Practicum
Micro Electro-Mechanical Systems
Transducers Technology
Digital Design + Practicum

SKILLS

C(++) • Python • Verilog
Linux • Arduino • PetaLinux
Assembly • MatLab
Vivado • XCTU

Also familiar with:
Java • Android • HTML
ROS • LabVIEW • LTSpice
Qucs • Multisim
EagleCAD

WORK EXPERIENCE

MICRON TECHNOLOGY OPERATIONS INDIA | Firmware Intern
May 2019 – July 2019 | Bengaluru, India

- Project involved memory-trace collection and analysis of DRAM peripherals on an AXI bus
- Enabled networking stacks for GEM, both in bare-metal implementation and PetaLinux environments to achieve maximum throughput
- Set up encryption for all data being transferred and gained insight on latency and bandwidth offered by the DRAM
- Extended the project to develop a Python framework to automate parsing and analysis of generated AXI logs

ADANI POWER MAHARASHTRA LIMITED | Engineering Intern
May 2018 – July 2018 | Tirora, Maharashtra

- Developed an intelligent Human Machine Interface and Data Acquisition System for controlling several industrial pumps spread across an area of more than 1600 acres.
- Project was based on Android, Arduino and GSM and was deployed within 25 days of initiation

RESEARCH

FAULT TOLERANT NETWORK ON CHIPS | Undegrad Research
Aug 2018 – Dec 2018 | Hyderabad, India

- Worked with Prof Soumya J to propose a new algorithm for fault-tolerant network on chips focusing on a packet-routing strategy for link faults between routers that occur either during manufacturing or in-operation. The algorithm decides the shortest path as well as takes care of distributing the load evenly across the network grid.
- Extended the algorithm for Mesh and Torus topologies for both, routers and link-level faults.

XBITS | Undergrad Research
Dec 2017 - Aug 2018 | Hyderabad, India

- Worked under Dr. Suman Kapur to create a medical device that can diagnose UTI (Urinary Tract Infections) almost 15 times quicker than conventional laboratory methods.
- The device employs an array of colour sensors that predict the contents of the specimen according to RGB absorbance values and a trained model.

PROJECTS

PPPP | Lab Oriented Project
Aug 2019 – Present | Hyderabad, India

- Worked with Prof Sanket Goel at the MEMS/Microfludics Lab to build PPPP, an approximate Poly-Potential Portable Potentiostat based on the LMP91000EVMto perform simple electrochemical analysis
- PPPP features a maximum resolution of 12 uV and a few hundred picoamps, and reduces the cost of a typical spectro-photometer by about 15-20 times.

IMPLEMENTATION OF MIPS-LIKE PROCESSOR Jan 2019 - Apr 2019 | Hyderabad, India

- Verilog based implementation of a 32-bit, 4-stage pipelined processor.
- Stages included Fetch, Decode, Execute, and Writeback

ECSP | Design Oriented Project
Jan 2019 – Apr 2019 | Hyderabad, India

- Worked with Prof Sanket Goel at the MEMS/Microfludics Lab to build ECSP, an intelligent colorimeter able to back-estimate the dominant absorption spectra of a solution with characteristic wavelengths in the visible light range.
- ECSP features a precision of 1 nm and reduces the cost of a typical spectro-photometer by about 150 times.

EASYMOUSE Open-source, Jan 2018 - Apr 2018 | Hyderabad, India

- Gesture controlled pointing device emulator written in Python and Arduino
- Targeted towards people with disabled fingers
- Wearable part can be worn around wrist, and data is transmitted wirelessly to the host device

ARDUPS Open-source, Mar 2018 - May 2018 | Hyderabad, India

- Smart ATMega328 based UPS for Single Board Computer devices
- Configurable through a minimalist command line interface providing options like power throttling and sleep scheduling
- Got selected for Unleash Invisible Intelligence contest by Hackster.io

VMS Open-source, May 2018 -July 2018 | Hyderabad, India

- Python utility to sync multiple devices playing the same video using MQTT
- Syncs timestamps instead of video frames, offering significantly less network usage
- Separate network handler (master) and playback (slave) programs to handle multiple playbacks at once

POSITIONS OF RESPONSIBILITY

PIXXEL | On-Board Computing
Aug 2018 - April 2019 | Hyderabad

Pixxel aims to build a constellation of nano-satellites to provide global, real-time, and affordable satellite imagery and AI models to extract valuable information and trends from the data beamed down from those satellites. The on-board computer handles all command processing for critical subsystems and data handling of payload.

HYPERLOOP INDIA | Electronics Team
Aug 2018 - Dec 2018 | Hyderabad, India

Member of the Embedded electronics team in Hyperloop India, India's first team to qualify for the SpaceX Hyperloop Competition. The responsibilities of the electronics team included sensor-interfacing, attitude-determination, and telemetry.

AUTOMATION AND ROBOTICS CLUB | Secretary
Apr 2018 – Apr 2019 | Hyderabad, India

Headed the robotics club of BITS Pilani, Hyderabad Campus. Conducted several workshops aimed at helping freshers kickstart into the field of robotics.

STUDENT MENTORSHIP PROGRAMME | Mentor
September 2017 – Present | Hyderabad, India

Mentored college freshers/sophomores in honing their skills in the field of electronics and robotics by taking regular classes on various topics like basic concepts in systems architecture.

HOBBIES AND EXTRA CURRICULARS

FILM MAKING | Imagine

SOCIAL SERVICE | National Service Scheme (NSS)-BPHC
September 2016 - April 2017

DIGITAL MUSIC COMPOSITION | SoundCloud Channel

WRITING | Blog

All relevant documents/contacts can be acknowledged if asked for. All text-blocks in blue are hyperlinks