

Akhil Guliani

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- EDUCATION**
- University of Wisconsin-Madison**, Madison, Wisconsin, USA
- Doctor of Philosophy (Ph.D.) in Computer Sciences Aug 2016 – Expected 2021
 - Cumulative GPA: 3.85 / 4.00
 - Research areas: Computer Systems, Architecture, Machine Learning.
- Northwestern University**, Evanston, Illinois, USA
- Master of Science (M.S.) in Computer Engineering Sep 2014 – Mar 2016
 - Cumulative GPA: 3.92 / 4.00
 - Adviser: Professor Seda Ogrenci Memik
 - Research areas: Computer Systems, Memory Management, Embedded Systems, Architecture, Machine Learning.
- Netaji Subhas Institute of Technology**, University of Delhi, New Delhi, India
- Bachelor of Engineering (B.E.) in Instrumentation & Control Aug 2008 – Jun 2012
 - Graduated in Class I with distinction.
 - Cumulative %age: 76.6 / 100
- SKILLS**
- **Programming Languages:** Python , C (Proficient) ; Julia, C++, Rust, C#, Java, L^AT_EX, R(familiar)
 - **Software Skills:** Linux Scripting (Intermediate), Linux Power Management, GEM5, MATLAB, Maple, Pspice, LabView, GEDA, Android (Familiar)
 - **Hardware skills:** AVR-core, Arduino, amd64
- INDUSTRIAL EXPERIENCE**
- GAIL (India) Ltd.** , New Delhi, India
- Senior Engineer (Instrumentation) Sep 2012 – Jul 2014
 - Project Execution engineer in the GAIL Petro-Chemicals-II Expansion Project in Pata, UP, India.
 - Responsible for execution of jobs related to Process Instrumentation System used, including procurement, inspection, erection, pre-commissioning and commissioning activities.
- Air India Ltd.** , New Delhi, India
- Industrial Trainee Dec 2011 – Jan 2012
 - Industrial Internship at Air India's Northern Engineering Office at IGI Airport, New Delhi.
- ACADEMIC EXPERIENCE**
- University of Wisconsin-Madison**, Madison, WI, USA
- Teaching Assistant, Department of Computer Sciences Sep 2018 – Dec 2018
 - Course: EECS 537 Introduction to Operating Systems, Fall 2018.
 - Research Assistant, Department of Computer Sciences Oct 2016 – Aug 2018
 - Advisor: Prof. Mike Swift
 - Conducted research to improve operating system power management (OSPM) utilities for datacenters.
- Northwestern University** , Evanston, IL, USA
- Research Assistant, Department of Preventive Medicine Jan 2016 – Mar 2016
 - Built the firmware and machine learning pipeline for a wearable eating detection system
 - Teaching Assistant, EECS Department Sep 2015 – Dec 2015
 - Course: EECS 339 Introduction to Database Systems, Fall 2015.
 - Research Assistant, EECS Department Jul 2015 – Sep 2015
 - Advisor: Prof. Seda Ogrenci Memik
 - Did architectural simulations using GEM5 to analyze an applications thermal and performance impact due to varying architectural configurations [3].
- Indian Institute of Technology Delhi**, New Delhi, India
- Student Intern under GIPEDI Dec 2012 – Jan 2011
 - Advisor: Prof. Subrat Kar
 - Built a reference board and an I2C driver for Femto OS RTOS for TinyAVR platform.
 - Built a reference board, firmware and updated the Linux app for programming a TI CC2530 SoC. May 2011 – Jul 2011
 - Student Intern May 2010 – Jul 2010
 - Advisor: Prof. I P Singh
 - Focused on understanding embedded systems using Intel 8085 and Atmel's AT89C51.
 - Developed a reference printed circuit board for AT89C51

PROJECTS	<p>Power Management and Scheduling 2016</p> <ul style="list-style-type: none"> ▪ Studied power delivery and control mechanisms provided by modern processors and SoCs. ▪ Built a userspace utility in Python to apply power delivery policies for apps running under constrained power. ▪ Built an MILP optimization model for describing the policies in Julia using JuMP <p>Implementing Device File Virtualization for Palacios Virtual Machine Monitor (VMM) [4] 2015 – 2016</p> <ul style="list-style-type: none"> ▪ Built Proof of concept for device virtualization at the device file boundary for Palacios VMM . ▪ Allows an unmodified Linux guest to access the devices present in an unmodified Linux host using a VMM supported system call forwarding interface. <p>Temperature Prediction for Runtime Thermal Management across System Components [1] 2015 –2016</p> <ul style="list-style-type: none"> ▪ Integrated an machine learning (ML) pipeline for application temperature prediction with a static job scheduler. ▪ Optimized the input and training of these ML Models to reduce prediction time. ▪ Used Python language with Pandas, Sci-kit learn and PyBrain libraries to build the system <p>Bluetooth Low Energy (BLE) Smart-watch Project 2015</p> <ul style="list-style-type: none"> ▪ Built a re-configurable BLE smart-watch platform. ▪ Developed the Arduino firmware to collect & android application to archive and display sensor data. <p>Future of Sandboxing in the Cloud 2017</p> <ul style="list-style-type: none"> ▪ Project for advanced OS course at UW-Madison. ▪ Surveyed the three popular sandboxing solutions (snap, docker and rump-unikernels) <p>Exploring Big-Data Systems 2017</p> <ul style="list-style-type: none"> ▪ Built sample Map-Reduce applications using Hadoop, Tez and Spark. ▪ Built a real-time tweet processing streaming application on Apache Storm and Flink ▪ Explored graph analysis using GraphX. <p>Userspace NFS using Rust 2017</p> <ul style="list-style-type: none"> ▪ Built a NFS v2 compliant userspace file system using FUSE and Apache Thrift in Rust. <p>Study of Loop Perforation in GPUs 2015</p> <ul style="list-style-type: none"> ▪ Implemented the approximate computing technique (loop perforation) for image processing algorithms in CUDA C. ▪ Assessed its usability for more complex tasks based on runtime and quality metrics <p>Designing Wireless File Transfer Mechanism for Remote Patient Monitoring System 2015</p> <ul style="list-style-type: none"> ▪ Built a C# client to collect data for a remote patient monitoring system. ▪ Transmitted asynchronously ordered sets of data generated by -multiple Microsoft Kinect v2 sensors over WiFi.
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JOURNAL

PUBLICATIONS

[1] Kaicheng Zhang, Akhil Guliani, Seda Ogren-ci-Memik, Gokhan Memik, Kazutomo Yoshii, Rajesh Sankaran, Pete Beckman, “Machine Learning-Based Temperature Prediction for Runtime Thermal Management across System Components”,*IEEE Trans. Parallel Distrib. Syst.*, 2018

[2] Renu Guliani, Amit Jain, Swati Sharma, Davinder Kaur, Akhil Guliani, Avinashi Kapoor, “Analysis of Electrical Characteristics using a Lambert W-Function Technique and MATLAB Simulation for Dye Sensitised ZnO Solar Cell”, *The Open Renewable Energy Journal*, 2013.

CONFERENCE PUBLICATIONS

[3] Dawei Li, Kaicheng Zhang, Akhil Guliani, Seda Ogren-ci-Memik “Adaptive Thermal Management for 3D ICs with Stacked DRAM Caches”, in *DAC 2017*, Austin, Texas, USA, Jun 2017.

[4] Peter Dinda, Akhil Guliani “Dark Shadows: User-level Guest/Host Linux Process Shadowing”, in *IEEE IC2E 2017*, Vancouver, Canada, Apr 2017. **[Best Paper]**

[5] Akhil Guliani “The Study and Implementation of Natural User Interface using Kinect”, in *IEEE Indicon*, Kochi, Kerala, India, Dec 2012.