# PAVAN KUMAR PALURI

**PhD Student @ University of Houston**

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pvpk1994 Pavan Kumar Paluri

## SUMMARY


- A self-driven and determined software developer with academic and research expertise in Embedded and Real-Time CPU virtualization with a research experience of 3 years and having co-authored in many IEEE Real-Time Operating system flagship conferences.


## EDUCATION

### PhD.

**University of Houston**

2017 – Now Houston, Texas

- Major: Computer Science
- Research field: Real-Time Systems; Operating-Systems; Virtualization; Scheduling Algorithms; Cyber-Physical Systems
- Thesis Topic: Real-Time Virtualization and Fault-Tolerance
- Enrolled for Masters in 2016, opted for PhD in 2017, transferred course credits from Masters to PhD.
- Relevant Coursework: Real-Time Systems, Operating Systems, Computer Architecture, Machine Learning
- GPA: 3.40/4.00

### Bachelor of Science

**VIT University**

2012 – 2016 Chennai, India

- Major: Computer Science & Engineering
- Research Project: Automated Collision Notification System using ARM LPC 2148 Microcontroller.
- Relevant Coursework: Data Structures and Algorithms, Embedded Systems.
- GPA: 8.23/10.00

## TEACHING ASSISTANT

### Operating Systems & Computer Networks

**University of Houston**

August 2017 – Now Houston, TX, US

## OTHERS

- Active IEEE student member
- Successfully completed *Google Cloud Platform Fundamentals: Core Infrastructure* course offered by Google Cloud.
- Featured on University's CS Dept website for seminal work along with the PhD advisor.

## WORK EXPERIENCE

### Research Assistant - Real Time Systems Laboratory

**University of Houston**

August 2017 – Now Houston, TX

- Developed and designed novel Fault-tolerance technique for one of very popular Real-time CPU virtualization models i.e., Regularity based Resource Partitioning (RRP).
  *Results*: Simulation results have shown excellent performance of real-time tasks even under high transient fault-rates
- First-ever to design and implement both single and multi-core Virtual Machine (VM) Schedulers using RRP model on popular open-source hypervisors Xen and XtratuM.
  *Results*: VM schedulers have shown significant improvement in reducing maximum latencies while maintaining high throughput in comparison with state-of-art Xen and XtratuM VM schedulers.
  Also, The first-ever to have implemented a new functional prototype of ARINC 653 Multi-Core VM scheduler on x-86 Xen hypervisor.
- Developed an exponential-time Optimal multi-core real-time VM scheduling algorithm along with an approximate pseudo-polynomial algorithm with sublinear-proportionally increasing execution time for RRP model.

### Research in Real-Time Traffic Routing

**University of Houston**

October 2019 – Ongoing Houston, TX

- This project aims at minimizing the average travel time of all vehicles in a given network with respect to their individual travel deadlines to improve overall traffic throughput.
- It also offers a test bed based on Simulation of Urban MObility (SUMO) that can evaluate the performance of a traffic routing policy based on the average travel time of all vehicle agents in a given traffic grid.
- Results have shown a significant 57 percent decrease in average travel time of vehicles in comparison to state-of-art existing approach.

## SKILLS

- **Languages**: C, C++, Python, R, Shell Scripting, HTML, CSS.
- **Hypervisors**: Xen, XtratuM, Wind River.
- **Real-Time Systems**: RT-Linux, LitmusRT, RT-Xen, LithOS.
- **Tools/ Software**: Nano, Xcode, PyCharm, CLion, Nginx webserver, PHP-FastCGI, Simulation of Urban MObility (SUMO), VxWorks.
- **APIs**: REST, xl-toolstack, Xen hypercalls, Libivrt, POSIX, self-developed Xen APIs, PAPI (Performance API) , Kubernetes (kubectl).

## PUBLICATIONS


- Cheng, A. M. K. et al. (2019). "Fault-Tolerant Regularity-Based Real-Time Virtual Resources". In: *2019 IEEE 25th International Conference on Embedded and Real-Time Computing Systems and Applications (RTCSA)*, pp. 1–12.
- Paluri, P. K. et al. (2019). "Work-in-Progress: Leveraging the Selfless Driving Model to Reduce Vehicular Network Congestion". In: *2019 IEEE Real-Time Systems Symposium (RTSS)*, pp. 548–551.
- Guangli, Pavan Kumar Paluri, and Albert M. K. Cheng (Dec. 2018). "RRP Edge Computing System". In: *International Workshop on Trustworthy & Real-time Edge Computing for Cyber-Physical Systems*. TN, USA.