

# Harshavardhan Kadiyala

Software Engineer

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## EDUCATION

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- **The University of British Columbia** Vancouver, Canada  
• *Master of Applied Science - Computer Engineering; CGPA: 86.5%* Dec. 2021  
• *Thesis: Kuber - Cost-Efficient Microservice Deployment Planner*  
• *Advisor: Prof. Julia Rubin*
- **Manipal University** Manipal, India  
• *Bachelor of Technology - Computer Engineering; CGPA: 8.76/10* July. 2015  
• *Courses: Operating Systems, Data Structures, Analysis Of Algorithms, Computer Networks, Databases*

## SKILLS SUMMARY

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- **Languages:** C++, Python, Go, JavaScript, SQL, Bash, Java, MATLAB
- **Frameworks:** Scikit, Django, Flask, NodeJS, LAMP
- **Tools:** Kubernetes, Apache Spark, Hadoop, Docker, GIT, KVM, PostgreSQL, MySQL, SQLite
- **Platforms:** Linux, Web, Windows, QNX, Raspberry, AWS, GCP, Azure, IBM Cloud

## DEVELOPMENT EXPERIENCE

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- **Siemens** Bangalore, India  
• *Systems Software Engineer* July 2015 – July 2017
  - Solved over 60 production issues and implemented 13 new features in an X-ray control system (600k lines of C++)
  - Communicated and coordinated with 15 globally distributed team members to test changes on new X-ray hardware
  - Initiated a personal side project to provide software-based X-ray tube simulation using CANopen network stack
  - Integrated simulator into automated deployment process that reduced initial testing time from a day to few minutes
- **SanDisk** Bangalore, India  
• *Graduate Intern* Jan 2015 – July 2015
  - Implemented 3 new features in SSD device simulation (100k lines of C++) used for automated testing of firmware

## RESEARCH EXPERIENCE

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- **The University of British Columbia** Vancouver, Canada  
• *Graduate Research Assistant* Sept 2017 – December 2021
  - **Kuber: Cost-Efficient Microservice Deployment Planner:**
    - \* Collaborated with **Samsung** to formulate problem of optimizing public cloud costs for microservices
    - \* Designed algorithm to optimize **AWS** costs by finding optimal VM types and co-locations
    - \* Implemented prototype in **Python** (5000 lines) and integrated with **Kubernetes** and **OpenNebula**
    - \* Reduced execution time and search costs by more than 60% when compared to state of the art
  - **Energy-Aware Scheduling for Microservice-Based Applications:**
    - \* Collaborated with **Huawei** to optimize data center energy consumption by reducing physical network traffic
    - \* Designed the scheduling algorithm to place microservices that have high network traffic on same physical machine
    - \* Implemented prototype using **Python** and **Golang** on **Kubernetes** (1073 lines)
    - \* Reduced energy consumption by 34% when compared to state of the art
  - **Promises and Challenges of Microservices: an Exploratory Study:**
    - \* Organized interview study to understand challenges companies face when running microservices
    - \* Collaborated with 21 engineers from 15 companies to collect insights
    - \* Published results in Empirical Software Engineering journal

## PUBLICATIONS

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- **H.Kadiyala**, A.Misail, and J.Rubin. Kuber: Cost-Efficient Microservice Deployment Planner. 29th IEEE International Conference on Software Analysis, Evolution and Reengineering, 2022 (24% acceptance rate)
- Y.Wang, **H.Kadiyala**, and J.Rubin. Promises and Challenges of Microservices: an Exploratory Study. Empirical Software Engineering (Springer), 2021
- A.Sampaio, **H.Kadiyala**, B.Hu, J.Steinbachery, T.Erwin, N.Rosa, I.Beschastnikh, J.Rubin. Supporting Microservice Evolution. 33rd International Conference on Software Maintenance and Evolution, 2017

## AWARDS AND FELLOWSHIPS

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- **Mitacs Accelerate Fellowship - 2019:**
  - Granted \$30000 by **Mitacs** and **Samsung** to design and implement Kuber
- **Siemens Innovation Ambassador - 2016:**
  - Awarded for proposing a new component which has resulted in cost reduction
- **Siemens Instant Purskar Award - 2015:**
  - Awarded as a recognition for quick adaption into working project domain