Misikir Eyob Gebrehiwot

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Currently working as a doctoral researcher in a project that studies energy efficiency in data centers by applying quantitative/stochastic models. In between my bachelor's and master's degrees I have worked in Nokia Siemens Networks (East African branch) for more than four years, where I managed to acquire valuable experience as an active customer support and project engineer.

Experience

Aalto University **Finland**
Researcher and Assistant Teacher *Sept. 2013 — present*

I am responsible for undertaking both independent and collaborative research that focuses on developing stochastic/quantitative models to study energy efficiency in data center task scheduling. I have also completed an independent data analysis project on network traffic measurement and analysis. In addtion to my duty as a researcher, I have also contributed as an assistant teacher in the following courses: *1) Introduction to Performance Analysis* 2)*Modeling and Analysis of Communication Networks*.

Skills applied:

Data pre-processing and analysis using Python, IPython Notebook and bash scripting. Computations and visualization using Mathematica. Analytic modeling.

Nokia Siemens Networks **East Africa**
Operations/Business Support System (OSS/OBS) Engineer *Feb. 2010 – Sept. 2012*

As a customer support team member, I was responsible for second line customer support for telecom operators in the East African region. I handled customer cases ranging from simple to complex. Day to day activities include: checking the arrival of measurements from network elements to the network management system, if not investigate the problem and if yes analyze the measurements and generate KPIs for weekly customer meeting; Checking the proper functioning of the network management system by supervising running processes, and checking the health of the file system. Additionally, I have also participated in software/hardware upgrade, installation, and commissioning of Nokia's OSS network elements.

Nokia Siemens Networks **East Africa**
Transmission Engineer *Mar. 2008 – Jan. 2010*

I participated in several expansion projects, where my specific responsibility was the commissioning of microwave (SDH) network elements in order to expand capacity from 1+1 to 3+1. This spanned over 24 SDH network elements and their management system. After the completion of these projects, I served in a team that provided 24/7 support for the entire waranty period of the project.

Skills acquired:

I had a valuable working experience on *NetAct (Nokia's proprietary OSS system), Windows 2003 Server, Linux File System handling and process supervision, and HP UX Unix* platforms.

Education

Academic Qualifications

- **Aalto University** — **Finland**
  Doctor of Science, School of Electrical Engineering — *2014–Present*
- **Aalto University** — **Finland**
  Master's degree in Communications Engineering, With distinction — *2012–2014*
- **Addis Ababa University** — **Ethiopia**
  Bachelor's degree in Electrical and Computer Engineering — *2002–2007*

Notable Projects

- **Simulator:**
  Energy-Performance trade-off simulator for an energy-aware server (A Python version of the simulator is also available). This simulator illustrates the system dynamics of an energy aware server that turns itself off during idle periods. It also provides average performance and power consumption statistics.The simulator can be found here: `http://demonstrations.wolfram.com/EnergyAwareMXG1Queue` (Oct - Dec 2015) `MXG1Queue`
- **Performance analysis:**
  Analysis of scheduling policies in current Linux implementation using real workload distribution taken from the Web Mathematica servers of *Wolfram|Alpha*. Special focus was on load balancing and robustness of the Round Robin, Least-Connection, and Shortest expected delay policies. (*July 2015, Waltham, MA, USA*) `http://education.wolfram.com/summer/school/alumni/2015/`
- **Network data measurement and analysis:**
  Scope: Traffic measurement and analysis of a network with about 2000 work stations (Intranet of one school)
  Method: Analysing trace files obtained from an access router and direct measurements using *Wireshark*
  Size of data analysed: About 10GB of trace files obtain from an access router and about 5GB of csv files generated by Wireshark
  Tools: Python, Bash scripts, Mathematica, and Wireshark
  Analysis: Traffic load distribution in different time scales, flow and packet distribution per port number, flow and packet length distribution (*Mar - May, 2015, Aalto University, Finland*)
- **Masters thesis (2014):**
  Title: Energy-aware queueing models and controls for server farms. In this study, I investigated the stochastic behaviour of energy-aware servers by applying techniques from operations research, queueing theory, and optimization. My master's thesis can be found here: `http://urn.fi/URN:NBN:fi:aalto-201406262260`
- **A very basic study on retail pricing:**
  Recently I was contemplating about two pricing schemes, and here is a link to my initial trial in addressing the problem. Please note that this is still basic and unpolished. `https://drive.google.com/file/d/0B1OhinHeXD-bDlwTjlIdnIxbW8/view?usp=sharing`

Publications

- Sept, 2014 Optimal sleep-state control of energy-aware M/G/1 queues, *8th International Conference on Performance Evaluation Methodologies and Tools, Bratislava, Slovakia 2014*.
- May 2015 Optimal energy-aware control policies for FIFO servers, *Journal of Performance Evaluation (Submitted)*
- Dec 2015 Energy-performance trade-off for processor sharing queues with setup delay, *Journal of Operations Research Letters*
- Feb 2016 Energy-aware server with SRPT scheduling: analysis and optimization, *13th International Conference on Quantitative Evaluation of SysTems (QEST 2016), (Submitted)*