

# Alemnew Sheferaw Asrese

## Research Interest

**Network Measurement, Quality of Experience (QoE), QoE Modelling, Web Performance, Network Management, Distributed & Networked Systems, Cloud Computing, Machine Learning for Networking.**

## Education

2014 – expected **Doctoral Candidate in Networking Technology**, *Aalto University, Finland*.  
Dissertation: Web Quality of Experience Measurement: Metrics, Methods and Tools  
2021 Advisors: Prof. Dr.-Ing. Jörg Ott and Dr. Pasi Sarolahti

2011 – 2014 **M.Sc. in Computer Science**, *University of Trento, Italy*, GPA – 99/110.  
Thesis: Design and Development of Dynamic Fleet Management System Prototype  
Advisor: Prof. Alberto Montresor

2007 – 2010 **B.Sc. in Information Science**, *Adama University, Ethiopia*, GPA: 3.9/4.0.  
Thesis: Online Voting System for National Electoral Board of Ethiopia.  
Advisor: Belayneh Mengistu

## Work Experience

2020 – **Senior Developer**, ERICSSON, Finland.  
- Working on cloud automation using Kubernetes.  
- Software defined storage for cloud native applications.

2014 – 2019 **Doctoral Candidate & Researcher**, AALTO UNIVERSITY, Finland.  
- Researched the factors affecting Web Performance and Quality of Experience.  
- Developed Web Performance and QoE measurement tool.  
- Instructed and assisted laboratory lessons of two master level courses.  
- Performed technical presentations at international conferences and seminars.

2013 – 2014 **Software Developer – Intern**, NEC LABORATORIES EUROPE, Germany.  
- Designed and implemented a dynamic fleet management system prototype by using the Vehicle Routing Problem algorithms.  
- Designed and implemented a communication platform for electric vehicles by extending the C2X-sdk functionality for vehicle to vehicle and vehicle to infrastructure communication.

Mar – Jul 2012 **Web Developer & Programmer**, GREENPREFAB, Italy.  
- Designed and implemented a cloud-based solution and web portal for civil engineers and architects to perform green-building rendering and energy efficiency simulation.

2010 – 2011 **Graduate Assistant**, ADAMA SCIENCE & TECHNOLOGY UNIVERSITY, Ethiopia.  
- Instructed both theoretical and laboratory lessons for bachelor students.  
- Designed and implemented a Malaria Expert System.

2008 – 2010 **Laboratory Technician, Librarian, & Intern**, ADAMA UNIVERSITY, Ethiopia.

- Troubleshooting & installing personal computers.
- Member of Library automation team.
- Configured the KOHA library integrated management system.
- Managing the library users and resources.
- Converted more than 500,000 e-books to PDF from different formats.

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## Research Visit

May – Jul **Visiting PhD Researcher**, TU MUNICH, Germany.

2018 Mentor: Dr. Vaibhav Bajpai

Topic: Measuring Web QoE in Cellular Networks

Jun – Aug **Visiting PhD Researcher**, TU MUNICH, Germany.

2017 Mentor: Dr. Vaibhav Bajpai

Topic: Measuring Web Latency & Rendering Performance

Mar – May **Visiting PhD Researcher**, INRIA OF PARIS, MUSE RESEARCH GROUP, France.

2017 Mentor: Dr. Vassilis Christofidis & Dr. Renata Cruz Teixeira

Topic: Analysis of Quality of Service (QoS) metrics for Web QoE modeling

Mar – Jul **Visiting PhD Student**, SIMULA RESEACH LABORATORY, Norway.

2016 Mentor: Dr. Özgü Alay

Topic: Measuring and modelling Web performance and QoE on mobile broadband networks under different mobility scenarios using MONROE platform.

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## Teaching Experience

### Aalto University

2015 **Teaching Assistant**, *Network Programming (M.Sc. level course)*.

Responsibility: Instructed and graded the software project.

2014 **Teaching Assistant**, *Communication Networks (M.Sc. level course)*.

Responsibility: Instructed and graded the laboratories exercises.

### Adama Science & Technology University

2011 **Instructor**, *Introduction to Information Technology*.

**Teaching Assistant**, *Web programming with HTML, CSS, JavaScript & PHP*.

2010 **Teaching Assistant**, *Fundamentals of Programming with C++, and Object Oriented Programming with Java*.

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## Technical Skills

- **Programming languages:** Java/JEE, Python, Go, JavaScript, Shell, Android, C++, PHP
- **Data analysis & visualization tools:** Python, R
- **Database:** MySQL, SQL
- **Networking tools:** Mininet, Wireshark
- **Operating systems:** OS X, Linux, Windows
- **Utilities:** vim, git, Yaml,  $\text{\LaTeX}$

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## Trainings

- June 2016 **Strategic Management, Leading & Coaching**, IE Business school / IE University, Madrid, Spain.
- July 2015 **Cyber Security**, Tallinn University of Technology, Tallinn, Estonia.

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## Awards and Grants

- 2016 ACM student travel grant to SIGCOMM conference, Florianopolis, Brazil.
- 2015 ACM student travel grant for CoNEXT conference, Heidelberg, Germany.
- 2015 ACM travel grant for Internet Measurement Conference, Tokyo, Japan.
- 2015 Award of Excellence for the year 2014 from University of Trento, Italy.
- 2014 Marie-Curie Initial Training Network grant for three years of PhD study.
- 2011 University of Trento Opera Universitaria Scholarship for a two years Master's study.

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## Publications

- [1] E. A. Walelgne, **A. S. Asrese**, J. Manner, V. Bajpai, and J. Ott. "Clustering and Predicting the Data Usage Patterns of Geographically Diverse Mobile Users". In: *Elsevier Computer Networks* 187 (Mar. 2021). [\[Impact Factor: 3.111\]](#). DOI: 10.1016/j.comnet.2020.107737.
- [2] E. A. Walelgne, **A. S. Asrese**, J. Manner, V. Bajpai, and J. Ott. "Understanding Data Usage Patterns of Geographically Diverse Mobile Users". In: *IEEE TNSM* (2020). [\[Impact Factor: 4.682\]](#). DOI: 10.1109/TNSM.2020.3037503.
- [3] **A. S. Asrese**, S. J. Eravuchira, V. Bajpai, P. Sarolahti, and J. Ott. "Measuring Web Latency and Rendering Performance: Method, Tools & Longitudinal Dataset". In: *IEEE TNSM* 16.2 (June 2019). [\[Impact Factor: 4.682\]](#). DOI: 10.1109/TNSM.2019.2896710.
- [4] **A. S. Asrese**, E. A. Walelgne, V. Bajpai, A. Lutu, Ö. Alay, and J. Ott. "Measuring Web Quality of Experience in Cellular Networks". In: *ACM PAM'19. Puerto Varas, Chile*. [\[26.6%, 20/75\]](#). Mar. 2019. DOI: 10.1007/978-3-030-15986-3\_2.
- [5] M. Isah, A. Phokeer, J. Chavula, A. Elmokashfi, and **A. S. Asrese**. "State of Internet Measurement in Africa – A Survey". In: *AFRICOMM 2019, Porto-Novo, Benin*. Mar. 2019.
- [6] D. N. da Hora, **A. S. Asrese**, V. Christophides, R. Teixeira, and D. Rossi. "Narrowing the Gap Between QoS Metrics and Web QoE Using Above-the-fold Metrics". In: *ACM PAM'18. Berlin, Germany*. [\[40%, 20/50\]](#) **Best Dataset Award**. Mar. 2018. DOI: 10.1007/978-3-319-76481-8\_3.
- [7] **A. S. Asrese**, P. Sarolahti, M. Boye, and J. Ott. "WePR: A Tool for Automated Web Performance Measurement". In: *IEEE Globecom'16 Workshops. Washington, DC, USA*. Dec. 2016. DOI: 10.1109/GLOCOMW.2016.7849082.
- [8] P. Reichl, S. Egger, S. Möller, K. Kilkki, M. Fiedler, T. Hoßfeld, C. Tsiraras, and **A. Asrese**. "Towards a Comprehensive Framework for QoE and User Behavior Modelling". In: *IEEE QoMEX'15. Pilos, Messinia, Greece*. May 2015. DOI: 10.1109/QoMEX.2015.7148138.

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## Theses

- [1] A. S. Asrese. "Web Quality of Experience Measurement: Metrics, Methods and Tools". Doctoral Dissertation. Aalto University, Under pre-examination.

- [2] A. S. Asrese. "Design and Development of Dynamic Fleet Management System". Master thesis. University of Trento, Italy, 2014.
- [3] A. S. Asrese. "Online Voting System for National Electoral Board of Ethiopia". Bachelor thesis. Adama University, Ethiopia, 2010.

## Posters and Demos

- [1] A. Phokeer, M. Isah, J. Chavula, **A. S. Asrese**, and A. Elmukashfi. "Characterizing RIPE Atlas Platform Deployment in Africa". In: *2<sup>nd</sup> Conference on Computing & Sustainable Societies*. 2019.
- [2] **A. S. Asrese**, E. A. Walelgne, A. Lutu, Ö. Alay, and J. Ott. "Poster abstract: Measuring Web Latency in Cellular Networks". In: *IEEE INFOCOM'18. Honolulu, HI, USA*. Apr. 2018. DOI: 10.1109/INFOCOMW.2018.8406855.
- [3] E. A. Walelgne, **A. S. Asrese**, V. Bajpai, J. Ott, and J. Manner. "Using Crowdsourcing Data for Adaptive Video Streaming in Cellular Network". In: *ACM MobiSys'18. Munich, Germany*. June 2018. DOI: 10.1145/3210240.3210804.
- [4] **A. S. Asrese**, P. Sarolahti, and J. Ott. "Web QoE Inference from Large-scale Measurement". In: *5<sup>th</sup> TMA PhD School. Barcelona, Spain*. Apr. 2015.

## Talks

- July 2019 Measuring Web QoE in Operational MBB Networks. *Simula Metropolitan Center for Data Engineering*. Oslo, Norway.
- June 2019 Measuring Web Latency: Observations from Large-scale Measurement. *Internet Measurement Workshop in Africa*. Kampala, Uganda.
- April 2019 Measuring Web QoE in Cellular Networks. *Doctoral Seminar of Connected Mobility Chair at Technical University of Munich*. Salzburg, Austria.
- October 2016 Web QoE and Performance in Mobile Broadband Networks. *Doctoral Seminar of Connected Mobility Chair at Technical University of Munich*. Burghausen, Germany.
- November 2014 Netradar – Measuring mobile networks. *ACM SIGCOMM IMC'14 Conference*. Vancouver, Canada

## Selected Software Projects

- WebLAR: Measuring Web Latency, ATF, and Rendering (using py, sh, java, js, docker)
- WePR: Web performance and rendering measurement system (using c, py, java, sh)
- Bilingual Malaria Expert System (using Java and HTML)
- Tewahedo Android App
- Library Management System (using HTML and JEE framework)

## Research Projects

- 2014 – 2017 **METRICS**, *Measurement for Europe: Training and Research for Internet Communications Science*, FP7-PEOPLE – Contract no. 607728.
  - Worked on WP 1 and contributed for deliverable 1.1, 1.2, 1.3.

- 2012 – 2015 **LEONE**, *From global measurements to local management*, EU FP7 ICT2011.1.1 – contract no. 317647.  
- Contributed for deliverable 4.3.
- 2010 – 2012 **VENUS-C**, *Virtual multidisciplinary environments using cloud computing*, EU FP7 Research Infrastructure – contract no. 261565.  
- Designed and implemented a cloud-based solution for architects and civil engineers to render green building architecture and energy efficiency simulations.
- 2010 – 2011 **Malaria Expert System**, *Grant from Ethiopian Ministry of ICT*, a collaboration project with Dr. Dereje Yohaness.  
- Designed and implemented a multilingual web-based expert system which takes malaria symptoms as an input and gives information about the situation of the patient.

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## Professional Services

### Technical Program Committee

- 2020 AFRICOMM EAI International Conference on e-Infrastructure and e-Services for Developing Countries
- 2018 AFRICOMM Workshop on Internet measurements research in Africa

### Shadow TPC

- 2017 – 2019 ACM Internet Measurement Conference
- 2018 IFIP Traffic Measurement and Analysis Conference

### Reviewer

- 2019 ELSEVIER Future Generation Computer Systems
- 2019 IEEE Transactions on Network & Service Management (TNSM)
- 2019 IEEE/IFIP Symposium on Integrated Network Management
- 2019 The Ethiopian Journal of Science and Technology (EJST)
- 2018 IFIP Networking Conference

### Organizer

- 2017 – 2018 International Conference on Ethiopian Church Studies

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## References

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