

Bachelor Thesis

Data Volumes for Mobile Users and Traffic Models

Motivation

This thesis studies data volumes generated by mobile users and derives traffic models for common user scenarios and network scenes. The goal is to measure real traffic on real devices, compare it with historical data when available, and derive practical recommendations for DSL, SIM-card, and eSIM usage, especially for travelers.

Goals

- Design user scenarios and use cases.
- Define network scenes with name, length, protocol, application, and related metadata.
- Measure real traffic of real users on real machines.
- Compare measurements with historical traffic data when possible.
- Derive recommendations for traffic volumes and access options.

Example user scenarios

- Teenager: text chat, watch videos, YouTube, social media.
- Student: text chat, watch tutorials, research, collaboration tools.
- Home office worker: video conferences, research, AI usage, cloud services.
- Vacation teenager: social media, streaming, photo sharing.
- Vacation family: maps, messaging, streaming, browsing, photo backup.

Project type Bachelor Thesis
Duration 1 Semester
Language(s) English
Field Computer Science

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Expected outcomes

- Scenario-based traffic model for mobile users.
- Measured traffic traces and summaries.
- Comparison of real measurements and historical data.
- Recommendations for typical data volumes and access plans.

This thesis builds on traffic measurement and smartphone usage diversity [2], mobile network capacity studies [3], global internet usage statistics [1], and digital development reports [4].

References

- [1] Cisco. Cisco annual internet report. Technical report, Cisco Systems, 2024.
- [2] H. Falaki, R. Mahajan, S. Kandula, D. Lymberopoulos, R. Govindan, and D. Estrin. Diversity in smartphone usage. In *Proceedings of the 8th International Conference on Mobile Systems, Applications, and Services (MobiSys)*, pages 179–194, 2010.
- [3] A. Ghosh, R. Ratasuk, B. Mondal, N. Mangalvedhe, and T. Thomas. LTE-Advanced: Next-generation wireless broadband technology. *IEEE Wireless Communications*, 17(3):10–22, 2010.
- [4] ITU. Measuring digital development: Facts and figures. Technical report, International Telecommunication Union, 2023.

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