Postdoc / Research Engineer Position

Title: Passive Measurement of Home Networks via eBPF on Resource-Constrained Access Points.

Host laboratory: LIP, ENS de Lyon, 46 allée d'Italie, Lyon, France

Advisor: Francesco Bronzino, MCF HDR ENS Lyon, `francesco.bronzino@ens-lyon.fr`.

Context. Home networks represent a critical component of end-to-end Internet performance, with WiFi access points serving as strategic vantage points for understanding real-world network behavior and user quality of experience. Building on recent work on latency measurements from home networks [1, 2, 3], this project proposes to develop an intelligent passive measurement framework that leverages eBPF and lightweight containers deployable on heterogeneous OpenWRT access points to collect fine-grained performance data without compromising user performance.

Expected Outcomes. The developed framework will be validated through real-world deployment to assess feasibility and operational performance. The goal is to publish findings at a top-tier networking conference (ACM SIGCOMM, IMC, or CoNEXT). The complete framework will be released as open-source software to facilitate technology transfer and community adoption.

Candidate Requirements.

- Ph.D. in computer science, computer networks, or a related field (for postdoc); or a Master's degree with strong research experience (for research engineer).
- Comfortable speaking English or French (French is not required).
- Strong background in computer networks and systems.
- Proficiency with systems programming; experience with eBPF, Linux kernel networking, or embedded/constrained platforms is a plus.
- Experience with experimental research and network measurement is a plus.

What to submit. An up to date CV, a list of publications (if any), and a letter of motivation clearly stating the candidate's interest in and relevant background for the described position. For Ph.D. holders, the candidate should also include one to two recommendation letters.

Conditions. The position is funded for 12 months, with the possibility of extension based on performance and funding availability. The salary will be commensurate with experience and determined by the standard salary scales of the host institution.

References

[1] A. Ben-Ameur, F. Bronzino, P. Schmitt, and N. Feamster. Measuring low latency at scale: A field study of l4s in residential broadband. In *International Conference on Passive and Active Network Measurement*, pages 168–181. Springer, 2026.

[2] S. Sundaresan, S. Burnett, N. Feamster, and W. De Donato. {BISmark}: A testbed for deploying measurements and applications in broadband access networks. In *2014 USENIX Annual Technical Conference (USENIX ATC 14)*, pages 383–394, 2014.

[3] S. Sundberg, A. Brunstrom, S. Ferlin-Reiter, J. D. Brouer, and T. Høiland-Jørgensen. Waiting at the front door: Continuous monitoring of latency in the host network stack. *arXiv preprint arXiv:2606.02057*, 2026.