

Sounak Kar

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EXPERIENCE

Postdoc <i>QuTech, TU Delft</i>	Oct'23 – Present <i>Delft, The Netherlands</i>
• Research topic: Modelling and performance analysis of quantum networks.	
Postdoc <i>EPFL</i>	Dec'21 – July'23 <i>Lausanne, Switzerland</i>
• Research topic: Modelling and performance analysis of quantum networks. • Teaching: TA for TCP/IP Networking and Smart Grid Technologies.	
Research Associate <i>DFG MAKI</i>	Apr'17 – Dec'21 <i>Darmstadt, Germany</i>
• Research topic: Modelling and performance analysis of classical networks. • Teaching: TA for Communication Networks I and Communication Networks IV at TU Darmstadt.	
Associate <i>Nomura Holdings</i>	Jul'14 – Mar'17 <i>Mumbai, India</i>
• Worked on models for collaterals.	
Manager <i>ICICI Bank</i>	Jun'10 – Jul'14 <i>Mumbai, India</i>
• Built and validated models for credit and market risk assessment.	

EDUCATION

Technische Universität Darmstadt <i>Ph.D., Electrical Engineering</i>	Darmstadt, Germany <i>Apr'17 – Oct'21</i>
Indian Statistical Institute <i>Master of Statistics</i>	Kolkata, India <i>Jul'08 – May'10</i>
Indian Statistical Institute <i>Bachelor of Statistics (Hons.)</i>	Kolkata, India <i>Jul'05 – May'08</i>

PUBLICATIONS AND PREPRINTS

Preprints

- **Kar, S.**, Mukhopadhyay, A., 2025. *QoS-aware Entanglement Routing in Repeater Networks*. Conference submission.
- **Kar, S.**, Le Boudec, JY., 2023. *An Analysis of the Completion Time of the BB84 Protocol*. arxiv preprint, <https://arxiv.org/abs/2304.10218> (workshop version at IEEE ISPASS 2023).
- **Kar, S.**, Alt, B., Koepll, H. and Rizk, A., 2022. *Optimal Decision Making in Active Queue Management*. arxiv preprint, <https://arxiv.org/abs/2202.10352>.

Journal papers

- Iñesta, Á.G., Davies, B., **Kar, S.**, and Wehner, S., 2025. *Entanglement Buffering with Multiple Quantum Memories*. Accepted in npj Quantum Information.
- **Kar, S.**, Wehner, S., 2024. *Convexification of the Quantum Network Utility Maximisation Problem*. IEEE Transactions on Quantum Engineering.
- **Kar, S.**, Rehrmann, R., Mukhopadhyay, A., Alt, B., Ciucu, F., Koepll, H., Binnig, C. and Rizk, A., 2020. *On the Throughput Optimization in Large-Scale Batch-Processing Systems*. Performance Evaluation, 144, pp.102-142.
- KhudaBukhsh, W.R., **Kar, S.**, Alt, B., Rizk, A. and Koepll, H., 2020. *Generalized Cost-based Job Scheduling in Very Large Heterogeneous Cluster Systems*. IEEE Transactions on Parallel and Distributed Systems, 31(11), pp.2594-2604.
- KhudaBukhsh, W.R., **Kar, S.**, Rizk, A. and Koepll, H., 2019. *Provisioning and Performance Evaluation of Parallel Systems with Output Synchronization*. ACM Transactions on Modeling and Performance Evaluation of Computing Systems (TOMPECS), 4(1), pp.1-31.

- Alt, B., Weckesser, M., Becker, C., Hollick, M., **Kar, S.**, Klein, A., Klose, R., Kluge, R., Koepll, H., Koldehofe, B. and KhudaBukhsh, W.R., 2019. *Transitions: A Protocol-independent View of the Future Internet*. Proceedings of the IEEE, 107(4), pp.835-846.

Conference papers

- Hark, R., Ghanmi, M., **Kar, S.**, Richerzhagen, N., Rizk, A. and Steinmetz, R., 2018. *Representative Measurement Point Selection to Monitor Software-defined Networks*. In IEEE Conference on Local Computer Networks (LCN) (pp. 511-518). IEEE.
- KhudaBukhsh, W.R., Alt, B., **Kar, S.**, Rizk, A. and Koepll, H., 2018. *Collaborative Uploading in Heterogeneous Networks: Optimal and Adaptive Strategies*. In IEEE INFOCOM- IEEE Conference on Computer Communications (pp. 1-9). IEEE.
- **Kar, S.**, Hark, R., Rizk, A. and Steinmetz, R., 2018, February. *Towards Optimal Placement of Monitoring Units in Time-Varying Networks Under Centralized Control*. In International Conference on Measurement, Modelling and Evaluation of Computing Systems (pp. 99-112). Springer, Cham.

Short papers

- **Kar, S.** and Rizk, A., 2020, June. *A Delicate Union of Batching and Parallelization Models in Distributed Computing and Communication*. In IFIP Networking Conference (Networking) (pp. 534-538). IEEE.
- **Kar, S.**, Rizk, A. and Fidler, M., 2018, September. *Multi-interface Communication: Interface Selection under Statistical Performance Constraints*. In International Teletraffic Congress (ITC 30) (pp. 7-12). IEEE.

TALKS

- LORIA, Online, Jan'26.
- *Tutorial* on Quantum Communication and Networking, IFIP Performance, Amsterdam, Nov'25.
- Quantum Workshop, National Conference in Communication, IIT Madras, Chennai, Feb'24 (*invited*).
- QuTech, TU Delft, Delft, Jun'23.
- ISPASS, Workshop on Performance Analysis of Quantum Computer Systems, Raleigh, Apr'23.
- CNI Seminar Series, Indian Institute of Science, Bangalore, Jan'23.
- EPFL IC, Online, Jun'21.
- MAKI Scientific Advisory Board meeting, TU Darmstadt, Darmstadt, Mar'21.
- IFIP Performance, Online, Nov'20.
- ICICI Bank, Business Intelligence Unit, Online, Jul'20.
- IFIP Networking, Network Modeling workshop, Online, Jun'20.
- ITC, NetCal workshop, Vienna, Sep'18.
- MMB, Erlangen, Feb'18.

PROFESSIONAL DUTIES

- Reviewing activities: Theory of Quantum Computation, Communication and Cryptography (TQC); IEEE/ACM Transactions on Networking (ToN); Computer Communication; Computer Networks.
- Organization: Local organization team (EPFL) of Workshop on Network Calculus (Sep'22).

OTHER SKILLS

Programming: Matlab, R, C.

Languages: Bengali (Native), Hindi (Fluent), English (Fluent), German (Basic).

REFERENCES

Ralf Steinmetz,
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Engineering and Information Technology,
TU Darmstadt,
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