

Ezgi Özyılkan

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Education

2021–present Ph.D., Electrical and Computer Engineering, NYU Tandon School of Engineering, USA.
Current GPA: 4.0.
Area: Neural (distributed) lossy data compression.
Advisor: Prof. Elza Erkip.

2017–2021 Integrated

M.Eng., Electrical Electronics Engineering, Imperial College London, **first class honors**.
M.Eng. Thesis: “*Deep Stereo Image Compression with Decoder Side Information using Wyner Common Information*”.
Advisor: Prof. Deniz Gündüz.

Interests and Skills

data compression (image, 3D/point cloud, task-aware/semantic features), **information theory** (source coding, multi-terminal), **quantization** (lossy, entropy-constrained), **signal processing** (data analysis, density modeling), **(tele)communications** (distributed, cooperative), **(deep) learning** (explainable AI, interpretability), **programming** (mostly Python, JAX, PyTorch).

* denotes equal contribution.

Profile

I am a collaborative researcher and enjoy working with people from diverse backgrounds, which is reflected in my experiences. My current research is driven by a passion for **connecting theory and practice** in data compression and communication problems, particularly in distributed scenarios. I leverage tools from **learning, signal processing, compression** and **information theory**, yielding interpretable results. Recent collaborators include Jona Ballé, Aaron B. Wagner and Deniz Gündüz. You can read about my PhD research highlighted on [NYU Tandon’s website](#).

Industry Experience

Research Intern at Apple Cupertino, CA, USA **5/2025–9/2025**
Working on learning-based 3DGS scene generation and compression with a focus on perceptual quality, under the Video Engineering group. Hosts: Kedar Tatwawadi, Oren Rippel.

PhD Research Intern at InterDigital Video Lab Manhattan, NY, USA **6/2024–8/2024**
Worked on learning-based lossy 3D/point cloud compression and generative models, focusing on geometry. Hosts: Jiahao Pang, Dong Tian. *Patent application filed*.

PhD Research Intern at InterDigital AI Lab Los Altos, CA, USA **6/2022–8/2022**
Worked on learning-based image compression for humans and machines, focusing on scalability. Hosts: Hyomin Choi, Fabien Racapé. *Co-developed a patent and submitted a conference paper, which appeared in IEEE Data Compression Conference (DCC) 2023*.

Business and Data (Summer) Analyst at Morgan Stanley London, UK **6/2019–8/2019**

Patents

H. Choi, F. Racapé, **E. Özyılkan**, and S. M. Ulhaq, “Method or apparatus rescaling a tensor of feature data using interpolation filters,” Int. Patent App. No. PCT/US2023/034255, pending.

Teaching Experience

Head Course Assistant at NYU Tandon Brooklyn, NY, USA **1/2022–12/2024**
Probability and Stochastic Processes (Fall 2022, Fall 2024) and Deep Learning (Spring 2022).

Journal Papers

E. Özyılkan*, F. Carpi*, S. Garg, and E. Erkip, “Learning-based compress-and-forward schemes for the relay channel,” *IEEE Journal on Selected Areas in Communications*, 2025. doi: [10.1109/JSAC.2025.3559156](#).

E. Özyılkan, J. Ballé, and E. Erkip, “Neural distributed compressor discovers binning,” *IEEE Journal on Selected Areas in Information Theory*, 2024. doi: [10.1109/JSAIT.2024.3393429](#).

Conference Papers

E. Özyılkan, O. K. Ulger, and E. Erkip, “Learning to write on dirty paper,” *2025 IEEE Information Theory Workshop (ITW)*, 2025, to appear.

E. Özyılkan*, F. Carpi*, S. Garg, and E. Erkip, “Neural compress-and-forward for the relay channel,” in *2024 IEEE 25th International Workshop on Signal Processing Advances in Wireless Communications (SPAWC)*, 2024. doi: [10.1109/SPAWC60668.2024.10694419](#).

E. Özyılkan and E. Erkip, “Distributed compression in the era of machine learning: A review of recent advances,” in *2024 58th Annual Conf. on Information Sciences and Systems (CISS)*, 2024. doi: [10.1109/CISS59072.2024.10480175](#).

S. F. Yilmaz, **E. Özyılkan**, D. Gündüz, and E. Erkip, “Distributed deep joint source-channel coding with decoder-only side information,” in *2024 IEEE Int. Conf. on Machine Learning for Communication and Networking (ICMLCN)*, 2024. doi: [10.1109/ICMLCN59089.2024.10625214](#).

N. Mital*, **E. Özyılkan***, A. Garjani*, and D. Gündüz, “Neural distributed image compression with cross-attention feature alignment,” in *2023 IEEE/CVF Winter Conf. on Applications of Computer Vision (WACV)*, 2023. doi: [10.1109/WACV56688.2023.00253](#).

E. Özyulkan, J. Ballé, and E. Erkip, "Learned Wyner–Ziv compressors recover binning," in *2023 IEEE Int. Symp. on Information Theory (ISIT)*, 2023. doi: [10.1109/ISIT54713.2023.10206542](https://doi.org/10.1109/ISIT54713.2023.10206542).

E. Özyulkan*, M. Ulhaq*, H. Choi, and F. Racapé, "Learned disentangled latent representations for scalable image coding for humans and machines," in *2023 Data Compression Conf. (DCC)*, 2023. doi: [10.1109/DCC55655.2023.00012](https://doi.org/10.1109/DCC55655.2023.00012).

N. Mital*, E. Özyulkan*, A. Garjani*, and D. Gündüz, "Neural distributed image compression using common information," in *2022 Data Compression Conf. (DCC)*, 2022. doi: [10.1109/DCC52660.2022.00026](https://doi.org/10.1109/DCC52660.2022.00026).

Workshop Papers

E. Özyulkan, J. Ballé, S. Bhadane, A. B. Wagner, and E. Erkip, "Breaking smoothness: The struggles of neural compressors with discontinuous mappings," in *Workshop on Machine Learning and Compression, NeurIPS 2024*, 2024. OpenReview: [qcM1fkFj3Y](https://openreview.net/forum?id=qcM1fkFj3Y).

E. Taştı, E. Özyulkan, O. K. Ülger, and E. Erkip, "Robust distributed compression with learned Heegard–Berger scheme," in *2024 IEEE Int. Symp. on Information Theory Workshops (ISIT-W)*, 2024. doi: [10.1109/ISIT-W61686.2024.10591775](https://doi.org/10.1109/ISIT-W61686.2024.10591775).

E. Özyulkan, J. Ballé, and E. Erkip, "Neural distributed compressor does binning," in *ICML 2023 Workshop on Neural Compression, selected for 1 of 4 contributed/spotlight talks*, 2023. OpenReview: [3Dq4FZJSga](https://openreview.net/forum?id=3Dq4FZJSga).

Selected Honors and Awards

Dante Youla Award for Graduate Research Excellence (2025), awarded by NYU Tandon.

David Goodman Leadership Award (2025), awarded by NYU Tandon.

Selected as an **iREDEFINE 2025 Fellow** by
[Electrical and Computer Engineering Department Heads Association \(ECEDHA\)](#).

IEEE Signal Processing Society Scholarship (2024–2026).

Best Reviewer Award at the [Neural Compression Workshop @ ICML 2023](#).

Recipient of a one-year **Google Research Collabs** funding award (Fall 2022) for Ph.D. research; granted to me, my advisor Elza Erkip (NYU), and Jona Ballé (Google).

Future Leader Ph.D. Fellowship (2021–2023), awarded by NYU Tandon.

2021 Ivor Tupper Prize in Signal Processing, awarded by Imperial College London.

Community Service

Co-organizer of the IEEE ISIT 2025 "[Learn to Compress & Compress to Learn](#)" Workshop.

Co-organizer of the NeurIPS 2024 [Machine Learning and Compression Workshop](#).

Lead organizer of the IEEE ISIT 2024 "[Learn to Compress](#)" Workshop.

Member of the [IEEE IT Society Student and Outreach Subcommittee](#) in 2024.

Reviewer for publications in both machine learning, information theory and engineering, such as **NeurIPS**, **JMLR**, **ICML**, **MLSys**, International Symposium on Information Theory (**ISIT**), Data Compression Conference (**DCC**), and several **IEEE Transactions** journals, such as **Journal on Selected Areas in Communications (JSAC)**, **Transactions on Information Theory**, **Transactions on Signal Processing**.

References

Elza Erkip, New York University Tandon School of Engineering
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Deniz Gündüz, Dep. of Electrical and Electronic Engineering, Imperial College London
d.gunduz@imperial.ac.uk