EZGİ ÖZYILKAN

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PROFILE

I am a collaborative researcher and enjoy working with people from diverse backgrounds. 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, Deniz Gündüz and Aaron B. Wagner.

ACADEMIC EXPERIENCE

NYU Tandon School of Engineering September 2021 - Present
Ph.D. Electrical and Computer Engineering. Current GPA: 4.0. *New York, NY*

- Advisor: Elza Erkip.
- Recipient of the Future Leader Ph.D. Fellowship (2021-2023).
- Relevant coursework: *Information Theory*, *Foundations of Deep Learning*, *Probability and Stochastic Processes*, *Estimation & Detection*, *Introduction to Real Analysis*.

Imperial College London September 2017 - June 2021
M.Eng. Electrical Electronics Engineering (Integrated Master's). First Class Honors. *London, UK*

- M.Eng. thesis title: *Deep Stereo Image Compression with Decoder Side Information using Wyner Common Information*. Advisor: Deniz Gündüz.

JOURNAL PAPERS

Ezgi Ozyilkan*, Fabrizio Carpi*, Siddharth Garg, Elza Erkip, "Learning-Based Compress-and-Forward for the Relay Channel", to appear at the *Proceedings of the IEEE Journal on Selected Areas in Communications (JSAC); Rethinking the Information Identification, Representation, and Transmission Pipeline: New Approaches to Data Compression and Communication*. Preprint available on arXiv.

Ezgi Ozyilkan, Johannes Ballé, Elza Erkip, "Neural Distributed Compressor Discovers Binning", *Proceedings of the IEEE Journal on Selected Areas in Information Theory (JSAIT); Data, Physics, and Life Through the Lens of Information Theory, Special Issue Dedicated to the Memory of Toby Berger*. Available on IEEE Xplore.

- GitHub: https://github.com/ezgimez/neural-distributed-compressor-JSAIT2024

CONFERENCE & WORKSHOP PAPERS

Ezgi Ozyilkan, Johannes Ballé, Sourbh Bhadane, Aaron B. Wagner, Elza Erkip, "Breaking Smoothness: The Struggles of Neural Compressors with Discontinuous Mappings", *Machine Learning and Compression Workshop @ NeurIPS 2024*, Vancouver, Canada, December 2024. Available on OpenReview.

Ezgi Ozyilkan*, Fabrizio Carpi*, Siddharth Garg, Elza Erkip, "Neural Compress-and-Forward for the Relay Channel", *Proceedings of the IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC)*, Lucca, Italy, September 2024. Available on IEEE Xplore.

- Patent application filed.

* denotes equal contribution.

Eyyup Tasci, Ezgi Ozyilkan, Oguzhan Kubilay Ulger, Elza Erkip, "Robust Distributed Compression with Learned Heegard-Berger Scheme", *Proceedings of the IEEE International Symposium on Information Theory Workshops (ISIT-W)*, Athens, Greece, July 2024. Available on IEEE Xplore.

Selim F. Yilmaz, Ezgi Ozyilkan, Deniz Gündüz, Elza Erkip, "Distributed Deep Joint Source-Channel Coding with Decoder-Only Side Information", *Proceedings of the IEEE International Conference on Machine Learning for Communication and Networking (ICMLCN)*, Stockholm, Sweden, May 2024. Available on IEEE Xplore.

- GitHub: `https://github.com/ipc-lab/deepjscc-wz`

Ezgi Ozyilkan, Elza Erkip, "Distributed Compression in the Era of Machine Learning: A Review of Recent Advances", *Proceedings of the IEEE 58th Annual Conference on Information Sciences and Systems (CISS)* , Princeton, New Jersey, March 2024. **Appeared as an invited paper.** Available on IEEE Xplore.

Ezgi Ozyilkan, Johannes Ballé, Elza Erkip, "Neural Distributed Compressor Does Binning", *Neural Compression Workshop @ ICML 2023*, Honolulu, Hawai'i, July 2023. **Selected for one of four contributed (spotlight) talks.** Available on OpenReview.

Ezgi Ozyilkan, Johannes Ballé, Elza Erkip, "Learned Wyner–Ziv Compressors Recover Binning", *Proceedings of the IEEE International Symposium on Information Theory (ISIT)*, Taipei, Taiwan, June 2023. Available on IEEE Xplore.

Ezgi Ozyilkan*, Mateen Ulhaq*, Hyomin Choi, Fabien Racapé, "Learned Disentangled Latent Representations for Scalable Image Coding for Humans and Machines", *Proceedings of the IEEE Data Compression Conference (DCC)*, Salt Lake City, Utah, March 2023. Available on IEEE Xplore.

Nitish Mital*, Ezgi Ozyilkan*, Ali Garjani*, Deniz Gündüz, "Neural Distributed Image Compression with Cross-Attention Feature Alignment", *Proceedings of the IEEE/CVF Winter Conference on Applications of Computer Vision (WACV)*, Waikoloa, Hawai'i, January 2023. Available on IEEE Xplore.

- GitHub: `https://github.com/ipc-lab/NDIC-CAM`

Nitish Mital*, Ezgi Ozyilkan*, Ali Garjani*, Deniz Gündüz, "Neural Distributed Image Compression using Common Information", *Proceedings of the IEEE Data Compression Conference (DCC)*, Salt Lake City, Utah, March 2022. Available on IEEE Xplore.

- GitHub: `https://github.com/ipc-lab/NDIC`

INDUSTRIAL EXPERIENCE

Apple May 2025 - September 2025
Incoming ML/CV Research Intern. *Cupertino, CA*

InterDigital Video Lab June 2024 - August 2024
PhD Research Intern. Hosts: Jiahao Pang, Dong Tian. *Manhattan, NY*

· Worked on learning-based lossy 3D/point cloud compression and generative models, focusing on geometry.

- Patent application filed.

InterDigital AI Lab June 2022 - August 2022
PhD Research Intern. Hosts: Hyomin Choi, Fabien Racapé. *Los Altos, CA*

· Worked on learning-based image compression for humans and machines, focusing on scalability.

- Co-developed a patent and submitted a conference paper, which appeared in IEEE DCC'23.

Morgan Stanley June 2019 - August 2019
Business and Data Analyst. *London, UK*

PATENTS

1. Hyomin Choi, Fabien Racapé, Ezgi Ozyilkan, Mateen Ulhaq, *Method or apparatus rescaling a tensor of feature data using interpolation filters*, International Patent Application No. PCT/US2023/034255, filed in October 2023.

TEACHING

ECE Department, NYU Tandon School of Engineering January 2022 - Present
(Head) Course Assistant. *New York, NY*

· Probability and Stochastic Processes (Fall 2024, Fall 2022) and Deep Learning (Spring 2022)

EEE Department, Imperial College London October 2019 - March 2021
Undergraduate Teaching Assistant. *London, UK*

· Communication Systems I (Spring 2021), Deep Learning (Spring 2021)
· Mathematics for Engineering (Spring 2020, Autumn 2020, Spring 2021)

SELECTED HONORS AND AWARDS

NSF iREDEFINE Fellow, 2025	ECE Department Heads Association
Signal Processing Society Scholarship, 2024-2026	IEEE Signal Processing Society
Student Travel Grant, July 2024	IEEE SPAWC 2024
Best Reviewer Award, July 2023	Neural Compression Workshop @ ICML 2023
Student Travel Grant, June 2023 and May 2024	IEEE ISIT 2023 - 2024
Student Travel Grant, June 2023	North American School of Information Theory
Student Travel Grant, May 2023	UC Berkeley Simons Institute
Future Leader Ph.D. Fellowship, 2021-2023	NYU Tandon School of Engineering
2021 Ivor Tupper Prize in Signal Processing	Imperial College London
Dean's List, 2020 and 2021	Imperial College London

SELECTED TALKS AND POSTERS

1. "From Nonlinear Transform Coding to Distributed Compression", High-Beams seminar series, London United Kingdom, February 2025. Invited talk.
2. "Neural Compress-and-Forward for the Relay Channel", IEEE International Workshop on Signal Processing Advances in Wireless Communications (SPAWC), Lucca Italy, September 2024. Poster.
3. "Neural Distributed Compressor Does Binning", Neural Compression Workshop @ ICML 2023, Honolulu HI, July 2023. Contributed talk.
4. "Learned Wyner-Ziv Compressors Recover Binning", IEEE International Symposium on Information Theory (ISIT), Taipei Taiwan, June 2023. Contributed talk.
5. "Learned Wyner–Ziv Compressors Recover Binning", UC Berkeley Simons Institute's workshop on *Information-Theoretic Methods for Trustworthy Machine Learning*, Berkeley CA, May 2023. Invited poster.
6. "Learned Disentangled Latent Representations for Scalable Image Coding for Humans and Machines", IEEE Data Compression Conference (DCC), Salt Lake City UT, March 2023. Contributed talk.
7. "Neural Distributed Image Compression using Common Information", IEEE Data Compression Conference (DCC), Salt Lake City UT, March 2022. Contributed talk.

SERVICE

Co-organizer	IEEE ISIT 2025 "Learn to Compress & Compress to Learn" Workshop
	NeurIPS 2024 Machine Learning and Compression Workshop
	IEEE ISIT 2024 "Learn to Compress" Workshop
Member	IEEE Information Theory Society Student and Outreach Subcommittee (2024 - Present)
Reviewer	International Conference on Machine Learning (ICML)
	Neural Information Processing Systems (NeurIPS)
	Journal of Machine Learning Research (JMLR)
	IEEE Transactions on Information Theory
	IEEE Transactions on Communications
	IEEE Transactions on Wireless Communications
	IEEE Journal on Selected Areas in Communications (JSAC)
	IEEE International Symposium on Information Theory (ISIT)
	IEEE Data Compression Conference (DCC)
	Conference on Machine Learning and Systems (MLSys)

REFERENCES

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