EZGİ ÖZYILKAN

ezgi.ozyilkan@nyu.edu ◇ https://ezgimez.github.io ◇ Pronouns: She/They

RESEARCH INTERESTS

Information Theory Deep Learning Source Coding/Compression Quantization

ACADEMIC EXPERIENCE

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

· Advisor: Prof. 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: Prof. Deniz Gündüz.

Information Processing Lab, Imperial College London April 2020 - September 2020
Undergraduate Research Assistant. Hosts: Mikolaj Jankowski and Deniz Gündüz. *London, UK*

· Worked on deep-learning-based joint source-channel coding.

JOURNAL PAPERS

Ezgi Ozyilkan, Johannes Ballé, Elza Erkip, "Neural Distributed Compressor Discovers Binning", to appear at *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*; preprint available on IEEE early access and on arXiv.

CONFERENCE PAPERS

Selim F. Yilmaz, Ezgi Ozyilkan, Deniz Gündüz, Elza Erkip, "Distributed Deep Joint Source-Channel Coding with Decoder-Only Side Information", to appear at *IEEE International Conference on Machine Learning for Communication and Networking* (ICMLCN), Stockholm, Sweden, May 2024, preprint available on arXiv.
-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.**

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.

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.

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.
-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.
- Video: `https://www.youtube.com/watch?v=xtK06jh35Jw`
- GitHub: `https://github.com/ipc-lab/NDIC`

WORKSHOP PAPERS

Eyyup Tasci, Ezgi Ozyilkan, Oguzhan Kubilay Ulger, Elza Erkip, "Robust Distributed Compression with Learned Heegard-Berger Scheme", to appear at *IEEE International Symposium on Information Theory 'Learn to Compress' Workshop* (ISIT Wkshps), Athens, Greece, July 2024, preprint available on arXiv.

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 talks.**

PREPRINTS AND MANUSCRIPTS UNDER PREPARATION.

Ezgi Ozyilkan, Johannes Ballé, Aaron B. Wagner, Elza Erkip, "A Survey on Neural Lossy Data Compression: Theory, Learning and Beyond", journal submission in preparation.

Ezgi Ozyilkan*, Fabrizio Carpi*, Siddharth Garg, Elza Erkip, "One-Shot Neural Compress-and-Forward Schemes for the Relay Channel", journal submission in preperation.

Ezgi Ozyilkan*, Fabrizio Carpi*, Siddharth Garg, Elza Erkip, "Neural Compress-and-Forward for the Relay Channel", conference submission under review.

INDUSTRIAL EXPERNECE

InterDigital Video Lab June 2024 - August 2024
Incoming Graduate R&I Intern. Hosts: Jiahao Pang, Dong Tian. *Manhattan, NY*

· Will work on 3D compression and generative models.

InterDigital AI Lab June 2022 - August 2022
Graduate R&I Intern. Hosts: Hyomin Choi, Fabien Racapé. *Los Altos, CA*

· Worked on deep-learning-based image compression, focusing on scalability; co-developed a patent and submitted a conference paper.

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 - December 2022
Graduate (Head) Assistant. *New York, NY*

· Probability and Stochastic Processes (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)

HONORS AND AWARDS

Best Reviewer Award, July 2023	Neural Compression Workshop @ ICML 2023
Student Travel Grant, June 2023 and May 2024	International Symposium on Information Theory
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	Imperial College London
Dean's List, 2020 and 2021	Imperial College London

SELECTED TALKS AND POSTERS

1. "Neural Distributed Compressor Does Binning", Neural Compression Workshop @ ICML 2023, Honolulu HI, July 2023. Contributed talk.
2. "Learned Wyner-Ziv Compressors Recover Binning", IEEE International Symposium on Information Theory (ISIT), Taipei Taiwan, June 2023. Contributed talk.
3. "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.
4. "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.
5. "Neural Distributed Image Compression using Common Information", IEEE Data Compression Conference (DCC), Salt Lake City UT, March 2022. Contributed talk.

SERVICE

Lead Organizer	IEEE ISIT 2024 "Learn to Compress" Workshop
Organizer	NYU Tandon ECE Graduate Student Poster Day (2023 - Present)
Member	IEEE ITSoc Student and Outreach Subcommittee (2024 - Present)
Reviewer	IEEE Transactions on Information Theory
	IEEE Transactions on Communications
	IEEE International Symposium on Information Theory (ISIT)
	IEEE Data Compression Conference (DCC)
	International Conference on Machine Learning (ICML)
	Conference on Machine Learning and Systems (MLSys)

REFERENCES

Elza Erkip (PhD Advisor)
Institute Professor
NYU Tandon School of Engineering
Electrical and Computer Engineering
✉ elza@nyu.edu

Deniz Gündüz (Integrated Master Advisor)
Professor in Information Processing
Imperial College London
Electrical and Electronic Engineering
✉ d.gunduz@imperial.ac.uk