Onat Dalmaz

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Research Interests

- Machine Learning
- Computer Vision
- Medical Imaging
- Signal Processing
- Generative Models
- Medical Image Analysis

Education

Sep 2023 – June 2028 **Stanford University, Stanford, CA, USA**, *Ph.D., Electrical Engineering.*

Sep 2020 – August 2023 **Bilkent University, Ankara, Turkey**, *M.Sc., Electrical and Electronics Engineering*, **Advisor**: Prof. Tolga Çukur, **CGPA**: 4.00/4.00.
Thesis: Advanced Deep Learning Algorithms for Multi-Modal Medical Image Synthesis

Sep 2016 – June 2020 **Bilkent University, Ankara, Turkey**, *B.Sc., Electrical and Electronics Engineering*, **CGPA**: 3.77/4.00.

Honors and Awards

2023 **Princeton University Graduate Fellowship**, *recipient of first year fellowship awarded to exceptional Ph.D. applicants .*

2022 **ISMRM Magna Cum Laude Merit Award**, *awarded to abstracts that score in the top 15% in 31st Joint Annual Meeting ISMRM-ESMRMB and ISMRT*, London, UK.

2022 **Best research paper award**, *in Bilkent University Graduate Research Conference 2022.*

2020-present **Scientist Supporting Program Scholarship**, *Scientific and Technological Research Council of Turkey*, Merit-based monthly stipend during M.Sc.

2016-present **Bilkent University Comprehensive Scholarship**, *full tuition waiver, stipend, and accommodation during B.Sc and M.Sc.*

2016-2020 **Turkish Prime Ministry Fellowship**, *a merit-based national fellowship of monthly stipend during B.Sc., granted to only 100 students among 2.5 million candidates in Turkey.*

2018 **Huawei "Seeds For The Future" winner**, *taken 2 weeks of elite Information and Communication Technologies training at (all costs covered) Shenzen Huawei HQ, China.*

2016 **Turkey Is Bank Golden Youth**, *a merit-based award to young Turkish prodigies*, Istanbul, Turkey.

2016 **Ranked 18th**, *among 2.5 million candidates in the Turkish National University Entrance exam 2016.*

Publications (**Google Scholar**)

Journal Articles

7. U. Mirza, **O. Dalmaz**, H.A. Bedel, G. Elmas, Y Korkmaz, A Gungor, SUH Dar, and T. Çukur, "Learning Fourier-Constrained Diffusion Bridges for MRI Reconstruction," under revision *Medical Image Analysis*, Aug 2023. [Online]. Available: https://arxiv.org/abs/2308.01096

6. H.A. Bedel, I. Sivgin, **O. Dalmaz**, S. Dar, and T. Çukur, "BolT: Fused Window Transformers for fMRI Time Series Analysis," in *Medical Image Analysis*, Volume 88, August 2023, 10284 [Online]. Available: https://www.sciencedirect.com/science/article/abs/pii/S1361841523001019

5. **M. Özbey***, **O. Dalmaz***, S. Dar, A. Bedel, S. Özturk, A. Güngör, and T. Çukur, "Unsupervised Medical Image Translation with Adversarial Diffusion Models," in *IEEE Transactions on Medical Imaging*, June 2023. [Online]. Available: https://ieeexplore.ieee.org/abstract/document/10167641 *:equal contribution

4. M. Yurt, **O. Dalmaz**, S. Dar, M. Ozbey, B. Tinaz, K. Oguz, and T. Çukur, "Semi-Supervised Learning of MRI Synthesis Without Fully-Sampled Ground Truths," in *IEEE Transactions on Medical Imaging* vol. 41, no. 12, pp. 3895-3906, Dec. 2022 [Online]. Available: https://ieeexplore.ieee.org/document/9857899

3. **O. Dalmaz**, U. Mirza, G. Elmas, M. Özbey, S. Dar, E. Ceyani, S. Avestimehr, and T. Çukur, "One Model to Unite Them All: Personalized Federated Learning of Multi-Contrast MRI Synthesis," under revision *Medical Image Analysis*, Jul 2022. [Online]. Available: https://arxiv.org/abs/2207.06509

2. I. Aytekin*, **O. Dalmaz***, K. Gonc, H. Ankishan, E.U. Saritas, U. Bagci, H. Celik, and T. Çukur, "COVID-19 Detection from Respiratory Sounds with Hierarchical Spectrogram Transformers," under revision *IEEE Journal of Biomedical and Health Informatics*, Jul 2022. [Online]. Available: https://arxiv.org/abs/2207.09529 *:equal contribution

1. **O. Dalmaz**, M. Yurt, and T. Çukur, "ResViT: Residual Vision Transformers for Multimodal Medical Image Synthesis," in *IEEE Transactions on Medical Imaging*, vol. 41, no. 10, pp. 2598-2614, Apr 2022. [Online]. Available: https://ieeexplore.ieee.org/document/9758823

Peer-Reviewed Conference Proceedings

20. H.A. Bedel, I. Sivgin, **O. Dalmaz**, S. Dar, and T. Çukur, "Multivariate Classification of fMRI Time Series with Fused Window Transformers," in *31st annual meeting of International Society for Magnetic Resonance Imaging (ISMRM)*, Toronto, Canada, June 2023.

19. **O. Dalmaz**, U. Mirza, G. Elmas, M. Özbey, S. Dar, E. Ceyani, S. Avestimehr, and T. Çukur, "A Personalized Federated Learning Approach for Multi-Contrast MRI Translation," in *31st annual meeting of International Society for Magnetic Resonance Imaging (ISMRM)*, Toronto, Canada, June 2023.

18. M. Özbey, **O. Dalmaz**, A. Bedel, S. Dar, Ş. Özturk, A. Güngör, and T. Çukur, "Adversarial Diffusion Probabilistic Models for Unpaired MRI Contrast Translation," in *31st annual meeting of International Society for Magnetic Resonance Imaging (ISMRM)*, Toronto, Canada, June 2023.

17. **O. Dalmaz**, M. Özbey, A. Bedel, S. Dar, Ş. Özturk, A. Güngör, and T. Çukur, "Cycle-Consistent Adversarial Diffusion For Unsupervised Medical Image Translation," in *IEEE 20th International Symposium on Biomedical Imaging (ISBI)*, Virtual Conference, Apr. 2023. (Presented online)

16. **O. Dalmaz**, U. Mirza, G. Elmas, M. Özbey, S. Dar, E. Ceyani, S. Avestimehr, and T. Çukur, "Personalized, Federated, And Unified MRI Contrast Synthesis," in *IEEE 20th International Symposium on Biomedical Imaging (ISBI)*, Virtual Conference, Apr. 2023. (Presented online)

15. **O. Dalmaz**, U. Mirza, G. Elmas, M. Özbey, S. Dar, E. Ceyani, S. Avestimehr, and T. Çukur, "pFLSynth: Personalized Federated Learning of Image Synthesis in Multi-Contrast MRI," in *NeurIPS Medical Imaging Meets*, Virtual Conference (oral), Dec. 2022. (Presented online)

14. M. Özbey, **O. Dalmaz**, A. Bedel, S. Dar, Ş. Özturk, A. Güngör, and T. Çukur, "Adversarial Diffusion Models for Unsupervised Medical Image Synthesis," *NeurIPS Medical Imaging Meets*, Virtual Conference, Dec. 2022. (Presented online)

13. **O. Dalmaz**, U. Mirza, G. Elmas, M. Özbey, S. Dar, and T. Çukur "A Specificity-Preserving Generative Model for Federated MRI Translation," in *3rd MICCAI Workshop on "Distributed, Collaborative and Federated Learning" (MICCAI-DeCaF)*, Virtual Conference, Sep. 2022 (Presented online)

12. **O. Dalmaz**, I. Aytekin, S. U. H. Dar, A. Erdem, E. Erdem, and T. Cukur, "Multi-Contrast MRI Synthesis with Channel-Exchanging-Network," *IEEE 30th Signal Processing and Communications Applications Conference (SIU)*, May 2022, Karabuk, Turkey (Presented on-site)

11. B. Saglam, F. B. Mutlu, K. Gonc, **O. Dalmaz**, and S. S. Kozat, "An Intrinsic Motivation Based Artificial Goal Generation in On-Policy Continuous Control," *IEEE 30th Signal Processing and Communications Applications Conference (SIU)*, May 2022, Karabuk, Turkey

10. M. U. Mirza, **O. Dalmaz**, and T. Çukur, "Skip Connections for Medical Image Synthesis with Generative Adversarial Networks," *IEEE 30th Signal Processing and Communications Applications Conference (SIU)*, May 2022, Karabuk, Turkey (Presented on-site)

9. B. Saglam, F. B. Mutlu, **O. Dalmaz**, and S. S. Kozat, "Unified Intrinsically Motivated Exploration for Off-Policy Learning in Continuous Action Spaces," *IEEE 30th Signal Processing and Communications Applications Conference (SIU)*, May 2022, Karabuk, Turkey

8. B. Saglam, **O. Dalmaz**, K. Gonc, and S. S. Kozat, "Improving the Performance of Batch-Constrained Reinforcement Learning in Continuous Action Domains via Generative Adversarial Networks," *IEEE 30th Signal Processing and Communications Applications Conference (SIU)*, May 2022, Karabuk, Turkey

7. **O. Dalmaz**, B. Sağlam, K. Gönç, S. U. Dar, and T. Çukur, "Bottleneck Sharing Generative Adversarial Networks for Unified Multi-Contrast MR Image Synthesis," *IEEE 30th Signal Processing and Communications Applications Conference (SIU)*, May 2022, Karabuk, Turkey (Presented on-site)

6. S. Y. Selçuk, **O. Dalmaz**, S. U. H. Dar, and T. Çukur, "Improving Image Synthesis Quality in Multi-Contrast MRI Using Transfer Learning via Autoencoders," *IEEE 30th Signal Processing and Communications Applications Conference (SIU)*, May 2022, Karabuk, Turkey (Presented on-site)

5. **O. Dalmaz**, M. Yurt, S. U. H. Dar, and T. Cukur, "Cycle-Consistent Adversarial Transformers for Unpaired MR Image Translation," in *30th annual meeting of International Society for Magnetic Resonance Imaging (ISMRM)*, London, May 2022. (oral, Presented on-site)

4. I. Aytekin, **O. Dalmaz**, K. Gonc, H. Ankishan, E.U. Saritas, U. Bagci, H. Celik, and T. Çukur, "Detecting COVID-19 from respiratory sound recordings with transformers," in *SPIE Medical Imaging 2022: Computer-Aided Diagnosis*, San Diego, USA, Apr. 2022 (oral, Presented on-site)

3. **O. Dalmaz**, M. Yurt, and T. Cukur, "Adversarial Residual Transformers For Multi-Modal Medical Image synthesis," in *IEEE 19th International Symposium on Biomedical Imaging (ISBI)*, Virtual Conference, Mar. 2022. (Presented online)

2. **O. Dalmaz**, B. Saglam, K. Gönç, and T. Çukur, "edaGAN: Encoder-Decoder Attention Generative Adversarial Networks for Multi-contrast MR Image Synthesis,"*IEEE 9th International Conference on Electrical and Electronics Engineering (ICEEE)*, Virtual Conference, Mar. 2022, (Presented online)

1. **O. Dalmaz**, M. Yurt, and T. Cukur, "Medical Image Synthesis with Residual Vision Transformers," *NeurIPS Medical Imaging Meets*, Virtual Conference, Dec. 2021. (Presented online)

Academic Duties

Program Committee

- **2022 MICCAI - Medical Image Computing and Computer Assisted Intervention**
  - Machine Learning in Clinical Neuroimaging
  - DGM4MICCAI: Deep Generative Models
- **2022 NeurIPS: Conference on Neural Information Processing Systems**
  - Medical Imaging Meets
  - Vision Transformers: Theory and Applications

Reviewer

- **2023 ICLR: International Conference on Learning Representations**
  - Main conference
- **IEEE Transactions on Medical Imaging**
- **IEEE Journal of Biomedical and Health Informatics**
- **Melba (The Journal of Machine Learning for Biomedical Imaging)**
- **Automatika Journal for Control, Measurement, Electronics, Computing and Communications**

Academic Experience

2020-2023 **Graduate Research Assistant**, *National Magnetic Resonance Research Center, Imaging and Computational Neuroscience (ICON) Lab, Supported by Scientific and Technological Research Council of Turkey with project grants 121E488, 121N029*, Bilkent University, Ankara, Turkey.

2020-2023 **Graduate Teaching Assistant**, Bilkent University, Ankara, Turkey.
- CS 115: Introduction to Programming in Python (Spring 2023)
- EEE 443/543: Neural Networks (Fall 2021, Spring 2022, Fall 2022, Spring 2023)
- EEE 202: Circuit Theory (Summer 2021)
- EEE 211: Analog Electronics (Fall 2020, Spring 2021)

2019 **Undergraduate Research Intern**, *Medical Robotics and Computer Integrated Surgery (MERCIS) Lab, under the supervision of Prof. Cenk Cavusoglu*, Case Western Reserve University, Cleveland, OH, USA.

2019 **Undergraduate Teaching Assistant**, *Bilkent University*, Ankara, Turkey.
- EEE 212: Microprocessors (Spring 2019, Fall 2019)

Software Systems

GitHub repositories for paper implementations:

- ResViT
- pFLSynth
- SynDiff
- HST
- BolT
- ssGAN

Computer Skills

Programming Languages: Python, MATLAB, Java, C++
Frameworks: PyTorch, TensorFlow, Hugging Face, OpenCV
Tools: LaTeX, Git, Spyder, Inkscape, DICOM, FSL

Last updated on October 12, 2023