

Oğuzhan Fatih Kar

PERSONAL DETAILS

<i>Mail</i>	oguzhan.kar@epfl.ch
<i>Website</i>	https://ofkar.github.io/
<i>LinkedIn</i>	https://www.linkedin.com/in/oguzhanfatihkar/
<i>Expertise</i>	computer vision, machine learning, computational imaging
<i>Keywords</i>	multi-modal foundation models, vision-language models, generative models, robustness to distribution shifts, test-time adaptation

EDUCATION

Ph.D. in Computer Science

2019-2024

Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland

Advisor: Amir Zamir

M.S. in Electrical and Electronics Engineering

2017-2019

Middle East Technical University (METU), Ankara, Turkey

Advisor: Figen S. Oktem

Thesis: Computational spectral imaging techniques using diffractive lenses and compressive sensing

Cumulative GPA: 3.93/4.00 (Top 1%)

B.S. in Electrical and Electronics Engineering

2013-2017

Middle East Technical University (METU), Ankara, Turkey

Cumulative GPA: 3.90/4.00 (Top 1%)

PROFESSIONAL EXPERIENCE

Student Researcher

2023-2024

Google, Zurich, Switzerland

- Research on developing a method that broadens visual understanding capabilities of vision-language models, leading to state-of-the-art performance for a wide range of tasks while being more efficient than other methods. Project page: [Link](#)
- The work is accepted at ECCV 2024 and a patent application is filed.
- Google hosts: Alessio Tonioni and Federico Tombari.

Research Assistant & Ph.D. Candidate

2019-2024

Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland

- Research on developing robust, adaptive, and multi-modal visual perception models that can operate in the real world.
- Findings are published in top-tier computer vision & machine learning conferences (CVPR'20 oral, ICCV'21 oral, CVPR'22 oral, NeurIPS'23 highlight, ICCV'23, ICLR'24, ECCV'24).

Research Scientist

2017-2019

ASELSAN Research Center, Ankara, Turkey

- Research on novel computational imaging techniques to improve resolution and reconstruction efficiency for the challenging infrared and multi-spectral imaging settings.

- Findings are published in high impact imaging conferences and journals (ICIP 2018, ICIP 2019, IEEE Transactions on Computational Imaging, Optics Letters)

Research Intern

2016

ASELSAN Research Center, Ankara, Turkey

- Developed and implemented non-uniformity correction algorithms to improve resolution for infrared imaging.

Digital Design Intern

2015

TUBITAK (Scientific and Technical Research Council of Turkey), Ankara, Turkey

- Implemented communication protocols between FPGA and Analog-to-Digital Converters and made performance analysis.

AWARDS AND HONORS

EPFL Computer and Communication Sciences Doctoral Program: EDIC Fellowship for the first year of Ph.D. studies (52k CHF), 2019-2020

TUBITAK (Scientific and Technical Research Council of Turkey): Full scholarship for M.S. studies, 2017-2019

METU Graduate School of Natural and Applied Sciences: Graduate courses performance award, 2019

METU Electrical and Electronics Engineering Department: Best Poster Presentation award in GRAD STAR Departmental Poster Competition, 2018

IEEE Signal Processing Society: Travel award for International Conference on Image Processing (ICIP), 2018, Athens, Greece

METU Electrical and Electronics Engineering Department: Dr. Bulent Kerim Altay award for 4.0/4.0 GPA in Fall semester, 2015

8 times (all semesters) listed in Dean's High Honor Roll, METU, 2013-2017

Ranked 228th in National University Entrance Exam 1st stage among 2 million students, 2012

Ranked 159th in National University Entrance Exam 2nd stage among 2 million students, 2012

PUBLICATIONS

Also available in Google Scholar.

Conference Publications (* denotes equal contribution, randomized order)

1. R. Bachmann*, **O. F. Kar***, D. Mizrahi*, A. Garjani, M. Gao, D. Griffiths, J. Hu, A. Dehghan, A. Zamir, "4M-21: An Any-to-Any Vision Model for Tens of Tasks and Modalities." arXiv, 2024. Project page: [Link](#)

2. **O. F. Kar**, A. Tonioni, P. Poklukar, A. Kulshrestha, A. Zamir, F. Tombari, "BRAVE: Broadening the visual encoding of vision-language models." ECCV, 2024. Project page: [Link](#)

3. H. Benoit*, L. Jiang*, A. Atanov*, **O. F. Kar**, M. Rigotti, A. Zamir, "Unraveling the Key Components of OOD Generalization via Diversification." ICLR, 2024.

4. D. Mizrahi*, R. Bachmann*, **O. F. Kar**, T. Yeo, M. Gao, A. Dehghan, A. Zamir, "4M: Massively Multimodal Masked Modeling." NeurIPS, 2023 (**Spotlight, top 4%**). Project page: [Link](#)

5. T. Yeo, **O. F. Kar**, Z. Sodagar, A. Zamir, "Rapid Network Adaptation: Learning to Adapt Neural Networks Using Test-Time Feedback." ICCV, 2023. Project page: [Link](#)

6. **O. F. Kar**, T. Yeo, A. Atanov, A. Zamir, "3D common corruptions and data augmentation." CVPR, 2022. (**Oral presentation, top 4%**). Project page: [Link](#)

7. **O. F. Kar**, T. Yeo, A. Zamir, "3D common corruptions for object recognition." ICML Shift

Happens Workshop, 2022. (**Invited**). Project page: [Link](#)

8. T. Yeo*, **O. F. Kar***, A. Zamir, “Robustness via cross-domain ensembles.” ICCV, 2021. (**Oral presentation, top 3%**). Project page: [Link](#)

9. A. Zamir*, A. Sax*, T. Yeo, **O. F. Kar**, N. Cheerla, R. Suri, Z. Cao, J. Malik, L. Guibas, “Robust learning through cross-task consistency.” arXiv, 2020. CVPR, 2020. (**Oral presentation, best paper award nomination**). Project page: [Link](#)

10. **O. F. Kar**, A. Gungor, H. E. Guven, “Real-time compressive video reconstruction for spatial multiplexing cameras.” IEEE Global Conference on Signal and Information Processing (GLOBALSIP), 2019. (**Oral presentation**)

11. **O. F. Kar**, A. Gungor, H. E. Guven, “Learning based regularization for spatial multiplexing cameras.” IEEE Global Conference on Signal and Information Processing (GLOBALSIP), 2019.

12. A. Gungor*, **O. F. Kar***, “A transform learning based deconvolution technique with super-resolution and microscanning applications.” IEEE International Conference on Image Processing (ICIP), 2019.

13. **O. F. Kar**, F. S. Oktem, “Fast computational spectral imaging using photon sieves.” OSA Imaging and Applied Optics Congress, 2019. (**Oral presentation**)

14. **O. F. Kar**, A. Gungor, H. E. Guven, “Optimal number of measurement analysis for coded compressive focal plane array imager.” IEEE Signal Processing and Communications Applications Conference (SIU), 2019. (**Oral presentation**) (**National conference**)

15. **O. F. Kar**, A. Gungor, H. E. Guven, “Compressive focal plane array imager reconstruction using learning based regularization.” IEEE Signal Processing and Communications Applications Conference (SIU), 2019. (**Oral presentation**) (**National conference**)

16. **O. F. Kar**, A. Gungor, S. Ilbey, C. B. Top, H. E. Guven, “A performance analysis on the optimal number of measurements for coded compressive imaging.” IEEE Global Conference on Signal and Information Processing (GLOBALSIP), 2018. (**Oral presentation**)

17. A. Gungor, **O. F. Kar**, H. E. Guven, “A matrix-free reconstruction method for compressive focal plane array imaging.” IEEE International Conference on Image Processing (ICIP), 2018.

18. **O. F. Kar**, U. Kamaci, F. C. Akyon, F. S. Oktem, “Compressive photon-sieve spectral imaging.” OSA Imaging and Applied Optics Congress, 2018. (**Oral presentation**)

19. **O. F. Kar**, A. Gungor, S. Ilbey, H. E. Guven, “An efficient parallel algorithm for single-pixel and FPA imaging.” SPIE Defense and Commercial Sensing Conference, 2018. (**Oral presentation**)

20. **O. F. Kar**, A. Gungor, H. E. Guven, “An adaptive relaxed alternating direction method of multipliers for compressive focal plane array imaging.” IEEE Signal Processing and Communications Applications Conference (SIU), 2018. (**Oral presentation**) (**National conference**)

21. **O. F. Kar**, U. Kamaci, F. C. Akyon, F. S. Oktem, “Effect of different sparsity priors on compressive photon-sieve spectral imaging.” IEEE Signal Processing and Communications Applications Conference (SIU), 2018. (**Oral presentation**) (**National conference**)

Journal Publications

1. F. S. Oktem, **O. F. Kar**, C. D. Bezek, F. Kamalabadi, “High-resolution multi-spectral imaging with diffractive lenses and learned reconstruction.” IEEE Transactions on Computational Imaging, 2021.

2. **O. F. Kar**, F. S. Oktem, “Compressive spectral imaging with diffractive lenses.” Optics Letters, 2019.

OTHER ACADEMIC ACTIVITIES AND SERVICES

Invited Talks:

- **Multimodal Foundation Models**, ETH Zurich, Switzerland (June 2024).

- **Rising Stars in AI Symposium**, KAUST, Saudi Arabia (February 2023).
- **TrustML Young Scientist Seminar**, RIKEN AIP, Japan (November 2022).

Academic Demo:

- **O. F. Kar**, A. Sax, T. Yeo, A. Zamir, “Robust learning through cross-task consistency.” ECCV, 2020.

Journal Reviewer:

- Optics Express (2019, 2020), Applied Optics (2019, 2020)

Conference Reviewer:

- CVPR (2022, 2023, 2024), ECCV (2020, 2022, 2024), ICCV (2021, 2023), ICLR (2023), NeurIPS (2023, 2024), EUSIPCO (2018, 2019)

PhD Application Evaluator:

- ELLIS: Fall 2021 (pre-screening)
- EPFL CS Doctoral Program (EDIC): Fall 2021, Spring 2022, Fall 2022, Fall 2023

Head Teaching Assistant:

- CS-503: Visual intelligence: machines and minds (Spring 2023, Spring 2024)

EPFL EDIC Buddy Program:

- Volunteered at the PhD Buddy Program aimed at helping new students integrate with the school and Lausanne for the years 2021, 2022, 2023, 2024.

SKILLS

<i>Languages</i>	Turkish (mother tongue)
	English (advanced)
	French (A2)
	German (A1)
<i>Computer</i>	Python, PyTorch, JAX, MATLAB, C, C++, LaTeX, Linux, Bash, Javascript