

# Oğuzhan Fatih Kar

## PERSONAL DETAILS

<i>Mail</i>	oguzhan.kar@epfl.ch
<i>Website</i>	<a href="https://ofkar.github.io/">https://ofkar.github.io/</a>
<i>LinkedIn</i>	<a href="https://www.linkedin.com/in/oguzhanfatihkar/">https://www.linkedin.com/in/oguzhanfatihkar/</a>
<i>Expertise</i>	computer vision, machine learning, computational imaging
<i>Keywords</i>	multimodal foundation models, multimodal LLMs, generative models, robustness, model adaptation

## EDUCATION

<b>Ph.D. in Computer Science</b> <i>Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland</i> Advisor: Amir Zamir	2019-2024
<b>M.S. in Electrical and Electronics Engineering</b> <i>Middle East Technical University (METU), Ankara, Turkey</i> Advisor: Figen S. Oktem Thesis: Computational spectral imaging techniques using diffractive lenses and compressive sensing Cumulative GPA: 3.93/4.00 (Top 1%)	2017-2019
<b>B.S. in Electrical and Electronics Engineering</b> <i>Middle East Technical University (METU), Ankara, Turkey</i> Cumulative GPA: 3.90/4.00 (Top 1%)	2013-2017

## PROFESSIONAL EXPERIENCE

<b>Student Researcher</b> <i>Google, Zurich, Switzerland</i> <ul style="list-style-type: none"><li>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: <a href="#">Link</a></li><li>The work is accepted at ECCV 2024 as oral (Top 2%) and a patent application is filed.</li><li>Google hosts: Alessio Tonioni and Federico Tombari.</li></ul>	2023-2024
<b>Research Assistant &amp; Ph.D. Candidate</b> <i>Swiss Federal Institute of Technology (EPFL), Lausanne, Switzerland</i> <ul style="list-style-type: none"><li>Research on developing robust, adaptive, and multi-modal visual perception models that can operate in the real world.</li><li>Findings are published in top computer vision &amp; machine learning conferences (CVPR'20 oral, ICCV'21 oral, CVPR'22 oral, NeurIPS'23 spotlight, ICCV'23, ICLR'24, ECCV'24 oral, NeurIPS'24).</li></ul>	2019-2024
<b>Research Scientist</b> <i>ASELSAN Research Center, Ankara, Turkey</i> <ul style="list-style-type: none"><li>Research on novel computational imaging techniques to improve resolution and reconstruction efficiency for the challenging infrared and multi-spectral imaging settings.</li></ul>	2017-2019

- 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. K. P. Singh, A. Garjani, M. U. Khattak, R. Singh, A. Atanov, **O. F. Kar**, A. Zamir, "Test space training for specialized vision representation." In submission, 2024.
2. R. Ramachandran, A. Garjani, R. Bachmann, A. Atanov, **O. F. Kar**, Amir Zamir, "Solving standard computer vision tasks with multimodal foundation models." In submission, 2024.
3. 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." NeurIPS, 2024. Project page: [Link](#)
4. **O. F. Kar**, A. Tonioni, P. Poklukar, A. Kulshrestha, A. Zamir, F. Tombari, "BRAVE: Broadening the visual encoding of vision-language models." ECCV, 2024 (**Oral, top 2%**). Project page: [Link](#)
5. H. Benoit\*, L. Jiang\*, A. Atanov\*, **O. F. Kar**, M. Rigotti, A. Zamir, "Unraveling the Key Components of OOD Generalization via Diversification." ICLR, 2024.
6. 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](#)

7. 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](#)
8. **O. F. Kar**, T. Yeo, A. Atanov, A. Zamir, “3D common corruptions and data augmentation.” CVPR, 2022. (**Oral presentation, top 4%**). Project page: [Link](#)
9. **O. F. Kar**, T. Yeo, A. Zamir, “3D common corruptions for object recognition.” ICML Shift Happens Workshop, 2022. (**Invited**). Project page: [Link](#)
10. T. Yeo\*, **O. F. Kar\***, A. Zamir, “Robustness via cross-domain ensembles.” ICCV, 2021. (**Oral presentation, top 3%**). Project page: [Link](#)
11. 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](#)
12. **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**)
13. **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.
14. 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.
15. **O. F. Kar**, F. S. Oktem, “Fast computational spectral imaging using photon sieves.” OSA Imaging and Applied Optics Congress, 2019. (**Oral presentation**)
16. **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**)
17. **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**)
18. **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**)
19. 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.
20. **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**)
21. **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**)
22. **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**)
23. **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**

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### **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.

### **Conference Reviewer:**

- Recognized as a top reviewer for NeurIPS 2024
- CVPR (2022, 2023, 2024), ECCV (2020, 2022, 2024), ICCV (2021, 2023), ICLR (2023), NeurIPS (2023, 2024), EUSIPCO (2018, 2019)

### **Journal Reviewer:**

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

### **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**

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<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