




Bahri Batuhan Bilecen

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Education

- **Bilkent University** Ankara, Türkiye
Master of Science in Computer Engineering - GPA: 3.83/4.00 2022-Present
- **Middle East Technical University (METU)** Ankara, Türkiye
Bachelor of Science in Electrical and Electronics Engineering - GPA: 3.69/4.00 2018-2022

Experience

- **Graduate Researcher** Ankara, Türkiye
Bilkent University September 2022 - Present
 - Investigated generative adversarial neural networks (GAN) on image enhancement & restoration problems, under the supervision of Asst. Prof. Ayşegül Dünder Boral. Currently working on 3D GANs and their inversions.
 - Graded assignments and proctored exams several times per semester. Voluntarily reviewed manuscripts submitted to respectable conferences and journals (*IEEE Transactions on Image Processing*, etc.).
 - **Tools:** *Python, OpenCV, PyTorch, L^AT_EX.*
- **Research Engineer** Ankara, Türkiye
ASELSAN Research August 2022 - Present
 - Focusing on low-level computer vision, inverse problems in image processing, image restoration & enhancement, and neural network optimization techniques.
 - Took part in national defense industry and mobility projects, and contributed to the confidential knowledge of the company.
 - *ASELSAN Inc.* is among the top 50 defense companies as of 2022.
- **Part-Time Research Engineer** Ankara, Türkiye
ASELSAN Research November 2021 - August 2022
 - Developed mobile device-friendly, deep learning-based super-resolution networks under the supervision of Dr. Mustafa Ayazoğlu. Participated in CVPR and ECCV workshops as a senior student.
 - **Tools:** *Python, OpenCV, PyTorch, TensorFlow, Keras, MATLAB.*
- **Undergraduate Researcher** Ankara, Türkiye
METU Center for Image Analysis (OGAM) July 2021 - June 2022
 - Conducted comparative performance analyses on frame-based and event-based optical flow algorithms, under the supervision of Prof. Aydın Alatan.
 - Performed controlled hands-on experiments on a DAVIS event camera, testing its dynamic range and latency.
 - **Tools:** *Python, Robot Operating System (ROS), Bash, C++.*
- **Part-Time Computer Vision Engineer** Ankara, Türkiye
STM October 2020 - April 2021
 - Worked on real-time background subtraction and object-tracking solutions for unmanned aerial vehicles (UAVs). Refactored some C++ code for real-time optimization, which is now used in the company's UAV products.
 - **Tools:** *C++, C, OpenCV, Python, Bash.*
- **Engineering Intern** Ankara, Türkiye
STM August 2020 - September 2020
 - Investigated image signal processing pipelines and image dehazing methods.
 - Performed a literature search on classical image contrast enhancement algorithms and performed controlled experiments to optimize their hyper-parameters.
 - **Tools:** *MATLAB, C++, Python.*

Projects

• ALKAN WASP & SAKA

March 2020 - September 2021

- Built custom-frame and autonomous quad-copters with ALKAN UAV Team, named Wasp and Saka, for the final rounds of 5th and 6th TUBİTAK (*The Scientific and Technological Research Council of Türkiye*) International Unmanned Aerial Vehicle Competitions, respectively.
- Learned the basics of *ArduPilot*, *MAVLink*, *DroneKit*, *ROS*, and *Gazebo*. Led the team with software setups and prepared tutorials. Modified ArduPilot C++ source code to add our custom flight modes.

• University Departmental Projects

2019-Present

- **Computer Architecture:** Designed a fully custom 16-bit instruction set architecture and a suitable multi-cycle CPU with *Verilog*.
- **Microprocessors:** Designed a frequency-based motor controller with ARM Cortex M4. Wrote the code in *ARM Assembly*, using the Thumb 2 instruction set.
- **Logic Design:** Designed a point-of-sale device using Cyclone V FPGA. Utilized *Verilog* and wrote a VGA protocol handler from scratch.
- **Digital Signal Processing:** Implemented an algorithm in *MATLAB* which embeds any image into a spectrogram using short-time Fourier transforms.
- **Advanced Signal Processing:** Investigated classical and deep priors in inverse problems in image restoration.

Honors & Scholarships

- Given a full scholarship by Bilkent University, including the tuition fee.
- Placed on High Honor and Honor Roll of METU every semester.
- Given a merit scholarship by METU Development Foundation (2018-2022).
- Given a merit scholarship by The Ministry of National Education of Türkiye (2010-2018).

Selected Publications

- Ahmet Burak Yıldırım, Hamza Pehlivan, **Bahri Batuhan Bilecen**, Ayşegül Dünder. “*Diverse Inpainting and Editing with GAN Inversion*”, IEEE/CVF ICCV, 2023.
- Alperen Kalay, **Bahri Batuhan Bilecen**, Mustafa Ayazoğlu. “*Towards Clip-Free Quantized Super-Resolution Networks: How to Tame Representative Images*”, BMVC, 2023.
- **Bahri Batuhan Bilecen** and Mustafa Ayazoğlu. “*Bicubic++: Slim, Slimmer, Slimmest - Designing an Industry-Grade Super-Resolution Network*”, NTIRE Workshop @ IEEE/CVF CVPR, 2023. **(RTSR Challenge Track 2 Winner)** ([🔗 repository page](#))
- Mustafa Ayazoğlu and **Bahri Batuhan Bilecen**. “*XCAT - Lightweight Quantized Single Image Super-Resolution Using Heterogeneous Group Convolutions and Cross Concatenation*”, AIM Workshop @ ECCV, 2022.
- **Bahri Batuhan Bilecen**, Alparslan Fişne, Mustafa Ayazoğlu. “*Efficient Multi-Purpose Cross-Attention Based Image Alignment Block for Edge Devices*”, Embedded Vision Workshop @ IEEE/CVF CVPR, 2022.

Skills & Interests

- **Languages:** Turkish (Native), English (TOEFL iBT: 104/120).
- **Related Academic Courses:** Computer Vision, Deep Learning, Deep Generative Networks, Advanced Signal Processing, Signals and Systems, Digital Signal Processing, Computer Architecture, Logic Design, Microprocessors, Operating Systems, Data Structures, Digital Electronics, C Programming, Linear Algebra.
- **Hobbies:** Avid classical guitar player, currently learning Gran Vals by Tarréga. Enjoys reading novels both in English and Turkish.