




# Bahri Batuhan Bilecen

EEE BSc grad, second-year MSc CS student, full-time research engineer  
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## Education

- **Bilkent University** Ankara, Türkiye  
*Master of Science in Computer Engineering* 2022-Present
- **Middle East Technical University (METU)** Ankara, Türkiye  
*Bachelor of Science in Electrical and Electronics Engineering* 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. 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.).
- **Research Engineer** Ankara, Türkiye  
*ASELSAN Research* August 2022 - Present
  - Focusing on low-level computer vision, inverse problems in image signal processing (restoration, enhancement, etc.), neural network optimization techniques, and person re-identification.
  - 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 Ayazoglu.
  - Participated in CVPR and ECCV workshops as a senior student as author.
- **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.
- **Part-Time Computer Vision Engineer** Ankara, Türkiye  
*STM Defence* 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.
- **Engineering Intern** Ankara, Türkiye  
*STM Defence* 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.

## Projects

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### • 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

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- 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

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- 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

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- **Languages:** Turkish (Native), English (TOEFL iBT: 104/120).
- **Tools:** Python, C, C++, MATLAB, Bash, JavaScript, TensorFlow, Keras, PyTorch, Robot Operating System (ROS), Verilog, ARM assembly,  $\LaTeX$ .
- **Related Academic Courses:** Mathematical Foundations of Data Science, Linear Algebra, Probability and Statistics, Computer Vision, Deep Learning, Deep Generative Networks, Advanced Signal Processing, Signals and Systems, Digital Signal Processing, Computer Architecture, Computer Graphics, Logic Design, Microprocessors, Operating Systems, Data Structures, Digital Electronics, C Programming.
- **Hobbies:** Avid classical guitar player, currently learning Gran Vals by Tarréga. Enjoys reading novels.