Adil Karjauv

CONTACT INFORMATION
Matrix ONE, Science Park 301, 1098 XH, Amsterdam, Netherlands

mikolez@gmail.com
+31-6-2727-0348

mikolez.github.io

RESEARCH BACKGROUND

- **Deep Learning**: Efficient video generative AI, efficient video processing, adversarial machine learning and its applications to multimedia.

EDUCATION

KAIST, Daejeon, Republic of Korea   2019–2021

- M.S. in Electrical Engineering (Advisor: In So Kweon)

KAIST, Daejeon, Republic of Korea   2014–2019

- B.S. in Computer Science

RESEARCH EXPERIENCE

- **Qualcomm AI Research**   Oct. 2022 - Present
  Amsterdam, Netherlands
  - Conducting research on efficient video processing and video generative AI.
  - Significantly contributed to the first on-device deep-learning-based video denoising solution at high resolution (QHD and 4K at 30FPS). One patent filed.
  - Significantly contributed to two papers (one accepted at ECCV 2024 and the other one is under review) and two patents on efficient video diffusion models.
  - Significantly contributed to the fastest diffusion-based mobile video editing demo on-device (presented at NeurIPS 2024).

- **Robotics and Computer Vision Lab**   Sept. 2019 - Jan. 2022
  Daejeon, Republic of Korea
  - Conducted research on adversarial machine learning and its applications to multimedia.
  - Published extensively in top machine learning venues (conferences and workshops).

- **Crazing Lab**   Apr. 2019 - July 2019
  Seoul, Republic of Korea
  - **Robotic Vision System:** Developed a robotic vision system based on several CSI cameras and NVIDIA embedded computer (Jetson Xavier). Used a low-level camera API and GStreamer framework to configure cameras. Designed and implemented algorithms for a real-time cylindrical panorama projection for the system.
    Technologies: Python, C++, NumPy, OpenCV, ROS, Libargus Camera API, GStreamer.

- **Motion Computing Lab**   June 2018 - Aug. 2018
  Daejeon, Republic of Korea
  - **Data-Driven Cloth Simulation:** Implemented scripts that automated data generation for model training by performing motion retargeting using computer graphics software API.
    Technologies: Python, Autodesk Maya, Autodesk MotionBuilder.

- **Computational Media Lab**   June 2017 - Sep. 2018
  Daejeon, Republic of Korea
  - **MotionSnap:** Conducted research on visual media retrieval using motion and other sensors data embedded in mobile and wearable devices. Designed a new approach for automatic photo capture and video editing and implemented algorithms based on the approach for many use cases such as jumping pictures retrieval, automatic camera selection, etc. Developed several Android applications based on these algorithms (see demo video for more details).
    Technologies: Java, Python, NumPy, Android Studio, OpenCV.
    Demo video: http://bit.ly/motionsnap_demo.

INTERNATIONAL CONFERENCES

1. **Adil Karjauv**[*], Noor Fathima[*], Ioannis Lelekas, Fatih Porikli, Amir Ghodrati, Amirhossein Habibian ([*]Equal contribution), "MoViE: Mobile Diffusion for Video Editing", **under review**.

2. Kumara Kahatapitiya, **Adil Karjauv**, Davide Abati, Fatih Porikli, Yuki M. Asano, Amirhossein Habibian, "Object-Centric Diffusion for Efficient Video Editing", in **ECCV 2024**.

3. Chaoning Zhang, Philipp Benz, **Adil Karjauv**, In So Kweon, Choong Seon Hong, "Simple Techniques are Sufficient for Boosting Adversarial Transferability", in **ACM MM 2023**.

4. Chaoning Zhang, Philipp Benz, **Adil Karjauv**, Jae Won Cho, Kang Zhang, In So Kweon, "Investigating Top-k White-Box and Transferable Black-box Attack", in **CVPR 2022**.

5. Philipp Benz*, Soomin Ham*, Chaoning Zhang*, **Adil Karjauv**, In So Kweon (*Equal contribution), "Adversarial Robustness Comparison of Vision Transformer and MLP-Mixer to CNNs", in **BMVC 2021**.

6. Chaoning Zhang*, **Adil Karjauv***, Philipp Benz*, In So Kweon (*Equal contribution), "Towards Robust Deep Hiding Under Non-Differentiable Distortions for Practical Blind Watermarking", in **ACM MM 2021**.

7. Chaoning Zhang*, Philipp Benz*, **Adil Karjauv***, In So Kweon (*Equal contribution), "Data-free Universal Adversarial Perturbation and Black-box Attack", in **ICCV 2021**.

8. Chaoning Zhang*, Philipp Benz*, Chenguo Lin*, **Adil Karjauv**, Jing Wu, In So Kweon (*Equal contribution), "A Survey on Universal Adversarial Attack", in **IJCAI 2021**.

9. Chaoning Zhang*, Philipp Benz*, **Adil Karjauv**, In So Kweon (*Equal contribution), "Universal Adversarial Training With Class-Wise Perturbations", in **ICME 2021**.

10. **Adil Karjauv***, Sanzhar Bakhtiyarov*, Chaoning Zhang, Jean-Charles Bazin, In So Kweon (*Equal contribution), "MotionSnap: A Motion Sensor-Based Approach for Automatic Capture and Editing of Photos and Videos on Smartphones", in **ICME 2021**.

11. Chaoning Zhang*, Philipp Benz*, **Adil Karjauv**, In So Kweon (*Equal contribution), "Universal Adversarial Perturbations Through the Lens of Deep Steganography: Towards a Fourier Perspective", in **AAAI 2021**.

12. Chaoning Zhang*, Philipp Benz*, **Adil Karjauv**, In So Kweon (*Equal contribution), "Revisiting Batch Normalization for Improving Corruption Robustness", in **WACV 2021**.

13. Chaoning Zhang*, Philipp Benz*, **Adil Karjauv***, Geng Sun, In So Kweon (*Equal contribution), "UDH: Universal Deep Hiding for Steganography, Watermarking, and Light Field Messaging", in **NeurIPS 2020**.

SELECTED WORKSHOPS

1. Chaoning Zhang*, **Adil Karjauv***, Philipp Benz*, Soomin Ham, Gyusang Cho, Chan-Hyun Youn, In So Kweon (*Equal contribution), "Is FGSM Optimal or Necessary for L_∞ Adversarial Attack?", in **CVPR 2021 AML-CV Workshop**.

2. Chaoning Zhang*, Philipp Benz*, **Adil Karjauv***, In So Kweon (*Equal contribution), "On Strength and Transferability of Adversarial Examples: Stronger Attack Transfers Better", in **ICLR 2021 RobustML Workshop**.

3. Chaoning Zhang*, Philipp Benz*, **Adil Karjauv***, In So Kweon (*Equal contribution), "Stochastic Depth Boosts Transferability of Non-targeted and Targeted Adversarial Attacks", in **ICLR 2021 RobustML Workshop**.

4. Chaoning Zhang*, Philipp Benz*, **Adil Karjauv***, Jae Won Cho, In So Kweon (*Equal contribution), "Towards Data-free Universal Adversarial Perturbations with Artificial Jigsaw Images", in **ICLR 2021 RobustML Workshop**.

PATENTS

- Noise Injection for Generalized Blind Denoising (pending, 18/589,018)
- Multimodal Guidance Distillation for Efficient Diffusion Models (pending, 18/770,606)
- Guidance Oscillation for Multi-Modal Diffusion Models (to be filed)

HONORS AND AWARDS

- Outstanding Paper Award in CVPR 2021 AML-CV Workshop   2021
- 9th Place Award (out of 1681 teams) CVPR 2021 Security AI Challenger Phase VI   2021
- URP (Undergraduate Research Program) Best Poster Award   2018
- Excellence Prize in the E*5 Competition by Startup KAIST (7,000$ Cash Award)   2018
- KAIST Undergraduate Scholarship: Full Tuition Fee and Monthly Stipend   2014 - 2019

TECHNICAL SKILLS

- **Programming languages:** Java, C, C++, Python, MATLAB.
- **Technologies:** PyTorch, TensorFlow, OpenCV, Android Studio.