Hiroki ADACHI

Research Associate

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EDUCATION

- 2014 – 2018 (B.E.): Department of Robotic Science and Technology, Chubu University, Japan
  Supervisor: Prof. Hironobu FUJIYOSHI
- 2018 – 2020 (M.E.): Graduate School of Engineering, Chubu University, Japan
  Supervisor: Prof. Hironobu FUJIYOSHI
- 2020 – 2023 (Ph.D.): Graduate School of Engineering, Chubu University, Japan
  Supervisor: Prof. Hironobu FUJIYOSHI

WORK/REARCH EXPERIENCE

- Denso IT Laboratory
  Research Internship, Aug 2018 – Oct 2018, Aug 2019 – Oct 2019
- 2020 – 2023: Research Assistant
  Chubu University (Supervisor: Prof. Hironobu FUJIYOSHI)
- 2023 – 2023/10: Postdoctoral Researcher
  Chubu University (Supervisor: Prof. Hironobu FUJIYOSHI)
  Moonshot Research & Development Program
- 2023/10 – ongoing: Research Associate
  Carnegie Mellon University (Supervisor: Prof. Kris M. KITANI)

INTERESTS

Computer Vision, Deep Learning, Adversarial Attack/Defense, Data Augmentation, Generative Model

PUBLICATIONS

Journals (in Japanese)

1. **Hiroki Adachi,** Tsubasa Hirakawa, Takayoshi Yamashita, Hironobu Fujiyoshi, “Effective Facial Image Generation for Recognition by Generative Adversarial Networks using Weighted Conditions”, the Institute of Electronics, Information and Communication Engineers Transactions on Information and Systems, J105-D, No.04, pp.271-282, 2022, https://doi.org/10.14923/transinfj.2021JDP7031.

2. **Hiroki Adachi,** Tsubasa Hirakawa, Takayoshi Yamashita, Hironobu Fujiyoshi, “The Effective Data Augmentation for Recognition by GAN Considering Attention Regions”, the Institute of Electronics, Information and Communication Engineers Transactions on Information and Systems, J105-D, No.07, pp.470-479, 2022, https://doi.org/10.14923/transinfj.2021JDP7066.

International Conferences

1. **Hiroki Adachi**, Hiroshi Fukui, Takayoshi Yamashita, Hironobu Fujiyoshi, “Facial Image Generation by Generative Adversarial Networks using Weighed Conditions”, the 14th International Conference on Computer Vision Theory and Applications (VISAPP), 2019.
2. **Hiroki Adachi**, Tsubasa Hirakawa, Takayoshi Yamashita, Hironobu Fujiyoshi, Yasunori Ishii, Kazuki Kozuka, “Masking and Mixing Adversarial Training”, the 18th International Conference on Computer Vision Theory and Applications (VISAPP), 2023.
3. Takaaki Iwayoshi,**Hiroki Adachi**, Tsubasa Hirakawa, Takayoshi Yamashita, Hironobu Fujiyoshi, “Complement Objective Mining Branch for Optimizing Attention Map”, the 18th International Conference on Computer Vision Theory and Applications (VISAPP), 2023.
4. Tenshi Ito, **Hiroki Adachi**, Tsubasa Hirakawa, Takayoshi Yamashita, Hironobu Fujiyoshi, “Analyzing the Accuracy, Representations, and Explainability of Various Loss Functions for Deep Learning”, IJCNN, 2023.
5. Kota Shimomura, **Hiroki Adachi**, Tsubasa Hirakawa, Takayoshi Yamashita, Hironobu Fujiyoshi, Masamitsu Tsuchiya, Yuji Yasui, “Potential Risk Estimation with Single Monocular Camera”, CVPRW, SSAD, 2023.

Domestic Conferences, Symposia and Workshops (in Japanese)

Refereed

1. **Hiroki Adachi**, Hiroshi Fukui, Takayoshi Yamashita, Hironobu Fujiyoshi, “重みを導入した Conditional Generative Adversarial Network による顔画像生成の高品質化”, the Meeting on Image Recognition and Understanding (MIRU), 2018.
2. Wataru Imaeda, **Hiroki Adachi**, Tsubasa Hirakawa, Takayoshi Yamashita, Hironobu Fujiyoshi, “Attention 機構を導入した CycleGAN による識別に有効なスタイル変換”, the Meeting on Image Recognition and Understanding (MIRU), 2019.
3. **Hiroki Adachi**, Takayoshi Yamashita, Hironobu Fujiyoshi, “注視領域を考慮した GAN による識別に効果的なデータ増幅”, the Meeting on Image Recognition and Understanding (MIRU), 2020.
4. Masayuki Takada, **Hiroki Adachi**, Takayoshi Yamashita, Hironobu Fujiyoshi, “Attention Pairwise Ranking によるスキル優劣判定における視覚的説明と高精度化”, the Meeting on Image Recognition and Understanding (MIRU), 2020.
5. Tenshi Ito, **Hiroki Adachi**, Tsubasa Hirakawa, Takayoshi Yamashita, Hironobu Fujiyoshi,” 画像分類タスクにおける損失関数と注視領域の傾向調査”, the Meeting on Image Recognition and Understanding (MIRU), 2023.

6. Shungo Fuji, **Hiroki Adachi**, Kazuki Kozuka, Yasunori Ishii, Tsubasa Hirakawa, Takayoshi Yamashita, Hironobu Fujiyoshi, “特徴量の類似性に基づく混合クラスの選択を導入したデータ拡張”, the Meeting on Image Recognition and Understanding (MIRU), 2023.
7. **Hiroki Adachi**, Tsubasa Hirakawa, Takayoshi Yamashita, Hironobu Fujiyoshi, “Adversarial mixup: 敵対的な混合比を用いた mixup によるデータ拡張”, the Meeting on Image Recognition and Understanding (MIRU), 2023.
8. Taiga Masuda, **Hiroki Adachi**, Tsubasa Hirakawa, Takayoshi Yamashita, Hironobu Fujiyoshi, Shohei Tanaka, Kuniaki Saito, Yoshitaka Ushiku, “Attention wegiht の操作による注目領域に着目したグラフ図のキャプション生成”, the Meeting on Image Recognition and Understanding (MIRU), 2024.

Non-Refereed

1. **Hiroki Adachi**, Hiroshi Fukui, Takayoshi Yamashita, Hironobu Fujiyoshi, “Step-by-Step Facial Image Generation by Generative Adversarial Networks using Weighted Conditions”, the Robotics Society of Japan (RSJ), 2018.
2. Kazuma Sasaki, **Hiroki Adachi**, Yifei Huang, Yuchi Ishikawa, Kotaro Kikuchi, Kazuki Fujimori, Li Zhenqiang, “Handling the Simulation-to-Reality Gap for Learning Systems of Real Robots: A Survey”, the Pattern Recognition and Media Understanding (PRMU) Society, 2018.
3. **Hiroki Adachi**, Tsubasa Hirakawa, Takayoshi Yamashita, Hironobu Fujiyoshi (Chubu Univ.), Yasunori Ishii, Shun Ishizaka, Kazuki Kozuka, “Adversarial Training to Mitigate the Gap Between Accuracy and Robustness”, the Meeting on Image Recognition and Understanding (MIRU), 2021.
4. **Hiroki Adachi**, Tsubasa Hirakawa, Takayoshi Yamashita, Hironobu Fujiyoshi, “Adversarial Training: A Survey”, the Pattern Recognition and Media Understanding (PRMU), 2022.
5. Chisa Domatsu, **Hiroki Adachi**, Tsubasa Hirakawa, Takayoshi Yamashita, Hironobu Fujiyoshi, “Detecting Adversarial Examples Focused on Changing of Feature Maps Before and After Geometrical Transformations”, the Meeting on Image Recognition and Understanding (MIRU), 2022.
6. Takaaki Iwayoshi,**Hiroki Adachi**, Tsubasa Hirakawa, Takayoshi Yamashita, Hironobu Fujiyoshi, “Attention Mining Branch を用いたアテンションマップの最適化と高精度化”, the Symposium on Sensing via Image Information (SSII), 2023.

Books

1. Chapter1: State-of-the-Art in Adversarial Training (イマドキの敵対的学習)
   State-of-the-Art in Computer Vision (コンピュータビジョン最前線) from Kyoritsu Publishing

AWARDS

- Student Award in the Meeting on Image Recognition and Understanding, 2020
- President’s Award in Chubu University 2020

- Research Encouragement Award in the Pattern Recognition and Media Understanding, 2022
- President's Award in Chubu University 2022

GRANTS

- Apr. 2018 – Mar. 2023: Chubu University Educational Successor Development Scholarship

  2018 – 2020: ¥1,120,000 (¥280,000/half year)

  2020 – 2023: ¥1,680,000 (¥280,000/half year)
- Jan. 2022 – Mar. 2023: Chubu University SPRING Scholarship Awardee

SKILLS & EXPERTISE

- Platforms: Linux, Mac OS
- Programming Languages: C/C++, Python, MATLAB, ROS
- Other skills: HTML/CSS, LaTeX, Server administrator, Network administrator