

Kotaro Kikuchi

PERSONAL DETAILS

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EDUCATION

Ph.D. in Computer Science, Waseda University 2018.4 - 2022.3 (expected)
M.Sc. in Computer Science, Waseda University 2016.4 - 2018.3
B.Sc. in Computer Science, Waseda University 2012.4 - 2016.3

RESEARCH PROJECTS

Computational Methods for Graphic Design Applications 2018 - Present

- ▷ **Latent space exploration for constrained layout generation**
We formalized the problem of controlling the output of a layout GAN according to user's requirements as a constrained optimization problem on the latent variables of a pre-trained GAN.
- ▷ **Hierarchical layout optimization with containment-aware parameterization**
We proposed an optimization-based method for generating plausible layouts for designs with visual containment between elements, such as web pages. Our method consists of tree structure estimation and layout generation based on the tree structure.
- ▷ **Generative adversarial training for object placement**
Spatially placing an object on a background is a basic operation in graphic design. We designed a new regularization method and successfully stabilized training of a GAN-based model that predicts the spatial parameters of a foreground object.

Computer Vision × Natural Language Processing 2015 - 2018

- ▷ **Zero-shot image classification by exploiting dictionary definitions**
We enriched semantic representation of object classes by using dictionary definitions to improve the accuracy in the zero-shot image classification task. (Master's thesis)
- ▷ **Video search by textual queries (TRECVID Ad-hoc Video Search)**
We developed a system that uses tens of thousands of concept detectors to find videos that involve concepts specified by a textual query. Our system won the competition in 2016 and 2017. (Bachelor's thesis)

RESEARCH INTERSHIPS

CyberAgent AI Lab 2018.6 - 2018.8

To generate variations of banner ads, we built a system that automatically replaces a layer containing a person in structured visual data such as SVG or PSD, while preserving its semantics and pose.

Microsoft Research Asia 2018.9 - 2018.12

We analyzed latest video retrieval models and tried to improve their accuracy by incorporating new attention mechanisms.

HONORS & AWARDS

- ▷ 1st place for manually-assisted setting and 2nd place for fully-automatic setting in the TRECVID Ad-hoc Video Search 2017 competition
- ▷ Student honorable mention in the Meeting on Image Recognition and Understanding 2017
- ▷ 1st place for manually-assisted setting in the TRECVID Ad-hoc Video Search 2016 competition

GRANTS

- ▷ Scholarship of Graduate Program for Embodiment Informatics 2016.4 - 2020.3

RESEARCH ACTIVITIES

- ▷ Student volunteer at International Conference on Computational Linguistics 2016

SKILLS

- ▷ **Languages** Japanese (native), English (upper-intermediate, TOEIC 800, 2016.11)
- ▷ **Programming** Python (preferred), Google Cloud Platform (e.g. Cloud Dataflow), HTML, CSS, JavaScript, MySQL

PUBLICATIONS

Peer-reviewed Journal Papers

1. K. Kikuchi, M. Otani, K. Yamaguchi, E. Simo-Serra. “Modeling Visual Containment for Web Page Layout Optimization”. In: *Computer Graphics Forum* 40.7 (2021).

Peer-reviewed Conference/Workshop Papers

1. K. Kikuchi, E. Simo-Serra, M. Otani, K. Yamaguchi. “Constrained Graphic Layout Generation via Latent Optimization”. In: *Proceedings of the ACM International Conference on Multimedia*. MM ’21. 2021.
2. K. Kikuchi, K. Yamaguchi, E. Simo-Serra, T. Kobayashi. “Regularized Adversarial Training for Single-Shot Virtual Try-On”. In: *International Conference on Computer Vision Workshop. Workshop on Computer Vision for Fashion, Art and Design*. ICCVW ’19. 2019, pp. 3149–3152.
3. K. Hirakawa, K. Kikuchi, K. Ueki, T. Kobayashi, Y. Hayashi. “Ad-hoc Video Search Improved by the Word Sense Filtering of Query Terms”. In: *Asia Information Retrieval Societies Conference*. Vol. 11292. AIRS ’18. 2018, pp. 157–163.
4. K. Ueki, K. Hirakawa, K. Kikuchi, T. Kobayashi. “Fine-grained Video Retrieval using Query Phrases - WasedaMeisei TRECVID 2017 AVS System -”. In: *International Conference on Pattern Recognition*. ICPR ’18. 2018, pp. 3322–3327.
5. T. Nakatsuka, T. Miyake, K. Kikuchi, A. Kobayashi, Y. Hayashi. “Analyzing Human Avoidance Behavior in Narrow Passage”. In: *International Conference on Systems, Man, and Cybernetics*. SMC ’18. 2018, pp. 3738–3743.

6. K. Kikuchi, N. Tawara, T. Kobayashi, Y. Hayashi. “Word Vector Augmentation by its Definition for Zero-shot Image Classification”. In: *Computer Vision and Pattern Recognition Workshops. Language and Vision Workshop*. CVPRW '17. 2017.
7. K. Kikuchi, K. Ueki, T. Ogawa, T. Kobayashi. “Video semantic indexing using object detection-derived features”. In: *European Signal Processing Conference*. EUSIPCO '16. 2016, pp. 1288–1292.