

Daftar Pustaka

- [1] Jonathan Long, Evan Shelhamer, and Trevor Darrell. Fully convolutional networks for semantic segmentation. In *Proceedings of the IEEE conference on computer vision and pattern recognition*, pages 3431–3440, 2015.
- [2] Ashish Vaswani, Noam Shazeer, Niki Parmar, Jakob Uszkoreit, Llion Jones, Aidan N Gomez, Łukasz Kaiser, and Illia Polosukhin. Attention is all you need. *Advances in neural information processing systems*, 30, 2017.
- [3] Enze Xie, Wenhai Wang, Zhiding Yu, Anima Anandkumar, Jose M Alvarez, and Ping Luo. Segformer: Simple and efficient design for semantic segmentation with transformers. *Advances in neural information processing systems*, 34:12077–12090, 2021.
- [4] Guoan Xu, Juncheng Li, Guangwei Gao, Huimin Lu, Jian Yang, and Dong Yue. Lightweight real-time semantic segmentation network with efficient transformer and cnn. *IEEE Transactions on Intelligent Transportation Systems*, 24(12):15897–15906, 2023.
- [5] WHO SAM team and WHO SDH team. Global status report on road safety 2023. Technical Report Salt Lake City Corporation, World Health Organization (WHO), Salt Lake City, UT, dec 2023.
- [6] Ardilson Pembuain, Sigit Priyanto, and Latif Suparma. The effect of road infrastructure on traffic accidents. In *11th Asia Pacific Transportation*

and the Environment Conference (APTE 2018), pages 176–182. Atlantis Press, 2019.

- [7] Wallace Orlandini Prado da Silva, Bruno Alessandro Farias, Igo Brasil Monteiro, Vinicius Pegorini, Dalcimar Casanova, and Danilo Rinaldi Bisonsini. Development of global quality index of unpaved roads. *Journal of Construction Engineering and Management*, 150(1):04023147, 2024.
- [8] Kementrian Pekerjaan Umum dan Perumahan Rakyat. Kondisi permukaan jalan nasional tahun 2023. <https://data.pu.go.id/dataset/kondisi-permukaan-jalan-nasional/resource/ea8516f7-bc85-47d3-b342-ac7464f00c80#{}>.
- [9] Nadeem Atif, Manas Bhuyan, and Rafi Ahamed. A review on semantic segmentation from a modern perspective. pages 1–6, 11 2019.
- [10] Iason Katsamenis, Athanasios Sakelliou, Nikolaos Bakalos, Eftychios Protopapadakis, Christos Klaridopoulos, Nikolaos Frangakis, Matthaios Bimpas, and Dimitris Kalogeras. Deep transformer networks for precise pothole segmentation tasks. In *Proceedings of the 16th International Conference on Pervasive Technologies Related to Assistive Environments*, pages 596–602, 2023.
- [11] Thiago Rateke and Aldo Von Wangenheim. Road surface detection and differentiation considering surface damages. *Autonomous Robots*, 45, 02 2021.
- [12] Seungbo Shim and Gye-Chun Cho. Lightweight semantic segmentation for road-surface damage recognition based on multiscale learning. *IEEE Access*, 8:102680–102690, 2020.
- [13] Hafizh Abdussyukur, Mahmud Dwi Sulistiyo, Ema Rachmawati, Mansur Maturidi Arief, Gamma Kosala, and Adiwijaya. Semantic segmen-

- tation for identifying road surface damages using lightweight encoder-decoder network. In *2022 International Conference on Advanced Creative Networks and Intelligent Systems (ICACNIS)*, pages 1–6, 2022.
- [14] Alexey Dosovitskiy, Lucas Beyer, Alexander Kolesnikov, Dirk Weissenborn, Xiaohua Zhai, Thomas Unterthiner, Mostafa Dehghani, Matthias Minderer, Georg Heigold, Sylvain Gelly, Jakob Uszkoreit, and Neil Houlsby. An image is worth 16x16 words: Transformers for image recognition at scale, 2020.
- [15] Olaf Ronneberger, Philipp Fischer, and Thomas Brox. U-net: Convolutional networks for biomedical image segmentation. In Nassir Navab, Joachim Hornegger, William M. Wells, and Alejandro F. Frangi, editors, *Medical Image Computing and Computer-Assisted Intervention – MICCAI 2015*, pages 234–241, Cham, 2015. Springer International Publishing.
- [16] Rui Fan, Hengli Wang, Mohammad J. Bocus, and Ming Liu. We learn better road pothole detection: From attention aggregation to adversarial domain adaptation. In Adrien Bartoli and Andrea Fusiello, editors, *Computer Vision – ECCV 2020 Workshops*, pages 285–300, Cham, 2020. Springer International Publishing.
- [17] Hiroya Maeda, Yoshihide Sekimoto, Toshikazu Seto, Takehiro Kashiya, and Hiroshi Omata. Road damage detection and classification using deep neural networks with smartphone images. *Computer-Aided Civil and Infrastructure Engineering*, 33(12):1127–1141, 2018.
- [18] Thiago Rateke, Karla Aparecida Justen, and Aldo von Wangenheim. Road surface classification with images captured from low-cost cameras – road traversing knowledge (rtk) dataset. *Revista de Informática Teórica e Aplicada (RITA)*, 26, 2019.

- [19] Yu Wang, Quan Zhou, Jia Liu, Jian Xiong, Guangwei Gao, Xiaofu Wu, and Longin Jan Latecki. Lednet: A lightweight encoder-decoder network for real-time semantic segmentation. In *2019 IEEE International Conference on Image Processing (ICIP)*, pages 1860–1864, 2019.
- [20] Mahmud Dwi Sulistiyo, Yasutomo Kawanishi, Daisuke Deguchi, Ichiro Ide, Takatsugu Hirayama, and Hiroshi Murase. Colatt-net: In reducing the ambiguity of pedestrian orientations on attribute-aware semantic segmentation task. *IEEJ Transactions on Electrical and Electronic Engineering*, 16(2):295–306, 2021.
- [21] Hongshan Yu, Zhengeng Yang, Lei Tan, Yaonan Wang, Wei Sun, Mingui Sun, and Yandong Tang. Methods and datasets on semantic segmentation: A review. *Neurocomputing*, 304:82–103, 2018.
- [22] Shijie Hao, Yuan Zhou, and Yanrong Guo. A brief survey on semantic segmentation with deep learning. *Neurocomputing*, 406:302–321, 2020.
- [23] Liang-Chieh Chen, George Papandreou, Iasonas Kokkinos, Kevin Murphy, and Alan L. Yuille. Deeplab: Semantic image segmentation with deep convolutional nets, atrous convolution, and fully connected crfs. *IEEE Transactions on Pattern Analysis and Machine Intelligence*, 40(4):834–848, 2018.
- [24] Hengshuang Zhao, Jianping Shi, Xiaojuan Qi, Xiaogang Wang, and Jiaya Jia. Pyramid scene parsing network. In *2017 IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pages 6230–6239, 2017.
- [25] Elia Moscoso Thompson, Andrea Ranieri, Silvia Biasotti, Miguel Chichon, Ivan Sipiran, Minh-Khoi Pham, Thang-Long Nguyen-Ho, Hai-Dang Nguyen, and Minh-Triet Tran. Shrec 2022: Pothole and crack

- detection in the road pavement using images and rgb-d data. *Computers & Graphics*, 107:161–171, 2022.
- [26] Yuanji Yang, Hui Wang, Junyang Kang, and Zhoucong Xu. A method for surveying road pavement distress based on front-view image data using a lightweight segmentation approach. *Journal of Computing in Civil Engineering*, 38(5):04024026, 2024.
- [27] Yuanji Yang, Zhipeng Ning, and Shenglin Li. A semantic segmentation method of front-view pavement distress based on segformer. In *2023 4th International Conference on Big Data & Artificial Intelligence & Software Engineering (ICBASE)*, pages 284–288, 2023.
- [28] Qipei Mei, Mustafa Gül, and Md Riasat Azim. Densely connected deep neural network considering connectivity of pixels for automatic crack detection. *Automation in Construction*, 110:103018, 11 2019.
- [29] Bianka T. Passos, Mateus J. Cassaniga, Anita M.R. Fernandes, Kátya B. Medeiros, and Eros Comunello. Cracks and potholes in road images, 2020.
- [30] Fan Yang, Lei Zhang, Sijia Yu, Danil Prokhorov, Xue Mei, and Haibin Ling. Feature pyramid and hierarchical boosting network for pavement crack detection. *IEEE Transactions on Intelligent Transportation Systems*, 21(4):1525–1535, 2020.
- [31] Markus Eisenbach, Ronny Stricker, Daniel Seichter, Karl Amende, Klaus Debes, Maximilian Sesselmann, Dirk Ebersbach, Ulrike Stoeckert, and Horst-Michael Gross. How to get pavement distress detection ready for deep learning? a systematic approach. In *2017 International Joint Conference on Neural Networks (IJCNN)*, pages 2039–2047, 2017.
- [32] Xiaolong Pei, Yu hong Zhao, Liwen Chen, Qingwei Guo, Zhiqiang Duan, Yue Pan, and Hua Hou. Robustness of machine learning to color, size

change, normalization, and image enhancement on micrograph datasets with large sample differences. *Materials & Design*, 232:112086, 2023.

- [33] Mahmud Dwi Sulistiyo, Yasutomo Kawanishi, Daisuke Deguchi, Ichiro Ide, Takatsugu Hirayama, and Hiroshi Murase. Performance boost of attribute-aware semantic segmentation via data augmentation for driver assistance. In *2020 8th International Conference on Information and Communication Technology (ICoICT)*, pages 1–6, 2020.
- [34] Saeid Asgari Taghanaki, Kumar Abhishek, Joseph Paul Cohen, Julien Cohen-Adad, and Ghassan Hamarneh. Deep semantic segmentation of natural and medical images: a review. *Artificial Intelligence Review*, 54:137–178, 2021.
- [35] Tsung-Yi Lin, Priya Goyal, Ross Girshick, Kaiming He, and Piotr Dollár. Focal loss for dense object detection, 2018.
- [36] Mahmud Dwi Sulistiyo, Yasutomo Kawanishi, Daisuke Deguchi, Takatsugu Hirayama, Ichiro Ide, J. Y. Zheng, and Hiroshi Murase. Attribute-aware semantic segmentation of road scenes for understanding pedestrian orientations. *2018 21st International Conference on Intelligent Transportation Systems (ITSC)*, pages 2698–2703, 2018.
- [37] R. Tiwari, A. Chavan, D. Gupta, G. Mago, A. Gupta, A. Gupta, S. Sharan, Y. Yang, S. Zhao, S. Wang, Y. Kwak, S. Jeong, Y. Lee, C. Kim, S. Kim, G. Gankhuyag, H. Jung, J. Ryu, H. Kim, B. H. Kim, T. Vo, S. Zaheer, A. Holston, C. Park, D. Dixit, N. Lele, K. Bhushan, D. Bhowmick, D. Arya, S. Gulshad, A. Habibian, A. Ghodrati, B. Bejnordi, J. Gupta, Z. Liu, J. Yu, D. Prasad, and Z. Shen. Rcv2023 challenges: Benchmarking model training and inference for resource-constrained deep learning. In *2023 IEEE/CVF International Conference on Computer*

Vision Workshops (ICCVW), pages 1526–1535, Los Alamitos, CA, USA,
oct 2023. IEEE Computer Society.