Nikita Starodubcev

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Research interests

Generative models in computer vision, distillation, theoretical analysis of deep learning models. I am interested in researching deep generative models to improve their efficiency and quality for practical applications such as image editing, generation, and customization.

Publications

[1] **N. Starodubcev**, D. Baranchuk, A. Fedorov, and A. Babenko, "Your student is better than expected: Adaptive teacher-student collaboration for text-conditional diffusion models", in *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)*, Jun. 2024, pp. 9275–9285.

[2] **N. Starodubcev**, M. Khoroshikh, A. Babenko, and D. Baranchuk, "Invertible consistency distillation for text-guided image editing in around 7 steps", *arXiv preprint arXiv:2406.14539*, 2024.

[3] **N. Starodubcev**, D. Baranchuk, V. Khrulkov, and A. Babenko, "Towards real-time text-driven image manipulation with unconditional diffusion models", *arXiv preprint arXiv:2304.04344*, 2023.

[4] **N. Starodubcev**, N. Nikitin, E. Andronova, K. Gavaza, D. Sidorenko, and A. Kalyuzhnaya, "Generative design of physical objects using modular framework", *Journal of Engineering Applications of Artificial Intelligence, Q1, arXiv:2207.14621*, 2022.

[5] **N. Starodubcev**, N. Nikitin, and A. Kalyuzhnaya, "Surrogate-assisted evolutionary generative design of breakwaters using deep convolutional networks", *IEEE Congress on Evolutionary Computation (IEEE CEC), Oral, arXiv:2204.03400*, 2022.

Experience

Yandex Research Nov 2022 – now
Deep Learning Researcher

- Research in diffusion models and their distilled versions for text-to-image generation and image editing

Composite Artificial Intelligence Lab, ITMO Dec 2021 – Jun 2023
Deep Learning Researcher

- Creation and development of the generative design framework GEFEST

Education

HSE University Jan 2024 – now
PhD student, Computer Science

- Thesis: Efficient diffusion models for computer vision problems
- Advisor: Artem Babenko

ITMO University Sep 2021 – Jul 2023
M.S. in Computer Science, GPA: 5.0/5.0

- Thesis: Generative design of physical objects using deep learning algorithms
- Advisor: Nikolay Nikitin

Saint Petersburg State University Sep 2017 – Jul 2021
B.S. in Computational Physics, GPA: 4.8/5.0

- Thesis: Machine learning methods for identifying quantum resonance states
- Advisor: Evgeny Yarevsky

Talks

- **Evolutionary generative design of breakwaters** 2-5 February 2022
  51st ITMO University Scientific and Educational Conference, best report
- **GEFEST: Framework for generative design of physical objects** 4-8 April 2022
  XI Congress of young scientists, St Petersburg
- **Surrogate-Assisted Evolutionary Generative Design Of Breakwaters Using Deep Convolutional Networks** 18-23 July 2022
  IEEE World Congress on Computational Intelligence, Italy
- **Generative design of two-dimensional physical objects with deep learning** 18-26 July 2022
  AIRI Conference, Russia, Sochi (Poster)
- **GLIDE: Towards Photorealistic Image Generation and Editing with Text-Guided Diffusion Models** 23 September 2022
  Research seminar of the Bayes group, HSE University, Russia
- **GEFEST: Framework for generative design of physical objects** 23-24 November 2022
  Artificial Intelligence Journey Conference, Russia, Poster
- **Distilled Diffusion Models** 11 November 2023
  Yandex, HSE University, Faculty of Computer Science

Relevant Skills

- **Programming:** Python, PyTorch, Docker, Git, Latex, Keras
- **Language:** Russian, English (upper-intermediate)