

I have been interested in computer vision since I joined Voronezh State University as a bachelor student. Unfortunately, there were no such courses there, but still I got a good base in applied mathematics and computer science. For example, the main focus in our department was on algorithms, data structures and studying different programming languages. As I already mentioned, I could hardly find a good specialist in computer vision at VSU, but I was enthusiastic enough to start a bachelor diploma project on this topic. It was dedicated to recognising images of automobile number plates.

After finishing my bachelor studies, I decided to enter the Department of Control and Applied Mathematics at [Moscow Institute of Physics and Technology](#) (MIPT). MIPT is considered one of the best Russian universities in IT, so I hoped to meet there a lot of highly motivated students, as well as many IT professional from both academic science and business. There I found the Chair of Control Systems, which were placed in State Research Institute of Aviation Systems (GosNIIAS), and joined the Laboratory of Photogrammetry, which had a project in semantic segmentation of satellite images. This project aimed at automated map development. I had to perform a full development cycle from image marking procedure to post-processing. We tried to use a number of neural networks with different types of architecture to find the most efficient one. However, it was the preprocessing of images, that had the essential role in semantic segmentation. After we realised that, we started to experiment with data augmentation and post-processing. All our experiments results with data pre-processing, neural networks and data post-processing can be found in a paper «[Semantic segmentation of satellite images of airports using convolutional neural networks](#)», that was published in September, 2020 in «Computer Optics» journal (in Russian, but images are speak for themselves).

As I was growing as a specialist, I felt that I am interested in applying my skills in a certain socially useful projects. That is why I decided to join [Dr. Alexander Gasnikov's](#) group at MIPT for my PhD-studies and Huawei Technologies company for work. My current research at MIPT is in the field of math optimization, especially transport flows modelling. Currently I have been working on the problem of traffic flows equilibrium in Beckmann and stable dynamic models. I have already taken part in writing two papers on this topic (unfortunately, both of them are in Russian). The first one, «[The recovery model for the calculation of correspondence matrix for Moscow](#)», is about a problem of restoring the correspondence matrix, I wrote it in the group with other students of dr. Gasnikov, and it was published in «[Mathematical modeling and numerical simulation](#)» journal in November, 2020. The problem of calculating the correspondence matrix was reduced to the task of entropy-linear programming and we described several numerical optimization methods for solving it: Sinkhorn method and Accelerated Sinkhorn method. The second one, «[Finding equilibrium in two-stage traffic assignment model](#)» describes a two-stage traffic assignment model and is not published yet, but accepted by journal. The theoretical part was developed by Dr. Gasnikov in his doctoral dissertation, however my contribution was in the code and many numerical [experiments](#) for the whole project.

However at the Huawei Technologies I worked as a machine learning engineer at the Mathematical Modelling Competence Center on the topic of maps parsing and demographic predicting. Also my terms of reference included some computer vision research: detecting height detection of buildings from satellite images.

In September 2020 I moved to Finland to start PhD-studies. I wanted to continue my computer vision research more deeply and entered Tampere University. But unfortunately, due to the personal reasons, I am finishing this job after my probation period at the research group. At the moment I am looking for a new job in Helsinki Metropolitan Area. I hope, my research experience will be useful for your company!