

## MSQRD founders and Vladimir Aleksandrovsky launch dentistry AI



Vladimir Aleksandrovsky, founder of Dental Fantasy  
Photo: Maxim Novikov

Successful IT specialists and creators of the popular online face masking service MSQRD Evgeny Nevgen and Sergey Gonchar, who sold their project to Facebook two years ago, have decided to try their luck in the emerging market of medical artificial intelligence systems. Today, together with the founder of the Fantasy group of companies, Vladimir Aleksandrovsky, they are working on the Diagnocat dental image recognition system. This AI service, as conceived by its authors, will help reduce the percentage of errors in the diagnosis of dental conditions. The startup founders, having already invested several hundred thousand dollars of their own funds in development, expect to attract even larger investments from Silicon Valley to the project. Vademecum tried to get an idea of Diagnocat's prospects.

The partners found each other and started working on the project a year and a half ago, says Aleksandrovsky: «The AI system that we have created is connected with a very personal story for me. My father lives in Germany and works as a programmer. That's why I always wanted to do something in the IT field, for example, automate diagnostics in dentistry. I tried to create something together with my father, but, as you know, it's difficult to work with relatives. The joint project did not work out, but the idea of a system that could become an assistant to the dentist in making diagnoses never left me».

Friends introduced Aleksandrovsky to Belarusian programmers Sergei Gonchar and Yevgeny Nevgen, who at that time were called the rising stars of the global IT industry; in 2016, Facebook bought out their company Masquerade, the developer of the application MSQRD, which allows you to apply various masks to faces online. The authors of the service, now used by over 10 million people, became employees of Mark Zuckerberg's corporation.

«It was all decided quite quickly; I told my future partners the idea of a program that would analyze medical images from a CT scanner for dentistry and determine the condition and pathology of the teeth», says Aleksandrovsky. «They liked the idea, and they agreed to invest in the project with me.» Nevgen and Gonchar confirmed to Vademecum that they are investors and partners of Diagnocat.

The project, as is often the case with startups, did not take off immediately. The first IT team hired by the developers missed the deadline and was never able to convert the idea into a product. «When I began to look into the reasons, it became clear that there was a management problem», Aleksandrovsky admits. «People were hired, but no one coordinated them on a daily basis. The project clearly lacked a leader, and I took over this function. I am currently working on the product full-time, and in the Fantasy group of companies I have moved away from operational management. In the fall of 2017, I brought in my friend and colleague Evgeny Shumilov, who for a long time was the director of the Russian representative office of Kavo [a supplier of dental devices – Vademecum], has serious management experience, and is well versed in the dental market.»

Later, the head of R&D (research and development) of the hotel booking company Ostrovok, Matvey Yezhov, joined the startup: «When I was introduced to Vladimir, I no longer worked at Ostrovok; I was engaged in my own projects. But I quickly realized that the idea for Diagnocat had good prospects and I joined the team as CTO.»

The team, strengthened by new players, was finally able to develop a prototype of a program that makes it possible to recognize a tooth, determine its structure and diagnose pathologies based on X-ray images. «In practice, it looks like this», explains Aleksandrovsky. «The dentist uploads an image through his personal account on the Diagnocat website, and the program immediately shows him the condition of the patient's teeth. Currently we can identify 42 pathologies and conditions, including caries, periodontitis, fillings, crowns and implants. In addition, we can automatically make slices required for subsequent endodontic treatment or implantation», says Aleksandrovsky. Diagnocat's founders note that in dentistry, the specialty of a radiologist is not as common as in general medicine, and working with images requires separate skills and practice that not all specialists have.

«In our internal experiments, we asked several different radiologists to make diagnoses from images, and the level of agreement on diagnoses didn't exceed 50%. The level of agreement among dentists is even lower; it's about 30%. There are situations when, due to misinterpretation of X-ray images, one dentist says that a tooth needs to be treated, and another that it needs to be extracted. Our mission is to make diagnostics in dentistry error-free», says Aleksandrovsky.

The founders of the project expect to sell the application to clinics and individual dentists, and are also targeting the international market. «I see great importance in what we are doing for all of humanity. Our algorithms make it possible to find conditions where the dentist isn't focusing or may miss them. In some countries, standards require the dentist to analyze the entire image. The potential of the technology is huge: just imagine that, in the near future, every person who has visited a dentist will be able to upload their image to Diagnocat and get a second opinion», Sergei Gonchar is convinced. A prototype of the project will be presented next spring at the International Dental Show in Cologne, but meanwhile, the startup founders have begun to look for investors in the United States: over the course of a year and a half, the partners, according to their own words, have invested "several hundred thousand dollars" of their own funds in Diagnocat.

«I am just learning how to attract investments, and, since we have decided to develop the project with venture capital, the most appropriate place for this is Silicon Valley. This fall I went to San Francisco, and before that I attended the Burning Man festival, which, as everyone told me, was supposed to change my life forever. In fact, it was Silicon Valley that changed my life; this is a place where you can meet someone in a coffee shop who invested in the early stages in Facebook or Tesla», says Aleksandrovsky.

The entrepreneur does not disclose the details of preliminary agreements with investors or the amount of needed investments: «I will say this. If such a startup brings money in at an early stage in Russia, then investors would value it at \$1.5 million. In Europe, such a project would be valued at \$5-7 million, and in the USA at \$10-12 million.»

### THINKING PROCESSORS

Vademecum's sources in dental clinics believe that the project may be in demand, at least in Russia. The volume of the dental services market is estimated at 250-300 billion rubles a year, which makes the segment one of the leaders in Russian commercial medicine. And, as Vademecum's monitoring has shown, no one has yet offered the industry a project like Diagnocat.

Among IT companies operating in the healthcare industry, a similar system for automatic analysis of dental images is being developed only by Ocutri, created by graduates of the Faculty of Computational Mathematics and Cybernetics of Moscow State University. But, according to the company's director, Bogdan Sevryukov, their AI system «is being created for one of the California startups in the field of telemedicine and is primarily focused on the US market».

Oleg Zinov, Deputy General Director of the President chain of clinics, confirmed for Vademecum that his company has already had preliminary discussions of the prospects of Diagnocat. Natalia Anisimova, President of the Association of the Anesthetics and Safe Dentistry, also believes that the project of Aleksandrovsky and his partners will become successful: «Working with a large volume of medical images is a daily practice of dentists; we constantly "simulate" treatment for the patient, showing him on an image what the result will be after our work. So a program that will optimize work with images will certainly be in demand.»

Vademecum's sources in the industry agree that the launch of Diagnocat has become a sign of an emerging trend: on the one hand, non-core investors have begun to enter the niche of medical AI systems, and on the other, clinics are interested in such developments. The most famous player in this narrow niche has so far been the owner of Expobank, Igor Kim, who, at the beginning of this year, co-founded Intellogic, a company specializing in the development of Botkin.AI, an AI system for support of medical decision-making, recognition of diagnostic images and pre-screening of patients for clinical studies.

«One of our investors, Primer Capital [invested in the company even before Kim – Vademecum], recently became a laureate of the National Venture Investor-2018 Award for the Botkin.AI project investment deal. I am sure that this award will not be the only profit of our project's investor», says the founder of the Botkin.AI project, Sergey Sorokin, ironically. «Medical organizations in four regions of Russia are already connected to our platform for intelligent analysis of diagnostic images. We will soon add breast cancer screening to the already launched lung cancer screening project.»

One after another, commercial medicine operators are getting involved in the development of AI systems. According to SPARK-Interfax, TV personality and founder of a chain of clinics Elena Malysheva, together with her sons and her traditional business partner Dmitry Shchiglik, has founded the specialized company Health AI Platform LLC. Malysheva confirmed for Vademecum that she plans to develop medical AI systems «in the broad sense of the word», but declined to disclose details. Dmitry Shchiglik also refrained from commenting on this topic.

The founder of the Open Clinic network, Philipp Mironovich, has built a service for processing and analyzing medical text data on the basis of the Robomed medical information system. «We are interested in the active development of medical AI systems in Russia, so we have undertaken some preparatory work and removal of barriers along the way. We see that the quality of the generation of medical data, all except medical images, is extremely low and prone to distortion. The reasons are poor qualifications and lack of discipline among doctors. Therefore, a year ago, we developed a blockchain project that helps understand the quality of the data we have and whether they correspond to the necessary classifications. We plan to develop this project at the systemic level together with the new National Base of Medical Knowledge association», promises Mironovich.

Most of Vademecum's sources believe that the rising tide of interest in AI systems in medicine in Russia is an echo of a global trend. According to research company Venture Scanner, there are more than 800 established companies and more than 1,000 startups operating in the global medical AI systems industry.

«This market is now booming all over the world. First, the results of clinical trials with an extensive evidence base on the effectiveness of AI systems appeared in professional IT publications, and then investors came to the industry. These factors had a certain impact on regulators: for example, while earlier the FDA issued only occasional approvals for such products, now the process of registering AI developments is starting to flow», says Alexander Gusev, expert at the specialized company K-MIS.