Artem Smirnov

ROBOTICS DEVELOPER
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What makes me a perfect fit for American Robotics?

I am young and enthusiastic about working and improving in robotics as part of a team of like-minded professionals.
I was introduced to developing robotics systems in my university community. After I graduated in 2017 (Bachelor's degree), I have been working with autonomous flying drones in commercial companies.

I started at Copter Express, a Russian startup company. They produce educational and industrial flying autonomous solutions (Clever kit and Pelican drone with charging station). Detailed information can be found at coex.tech. I was creating the architecture of pipeline building os-images, and adding to a Debian-repository for reduction time of builds. I developed some ROS-nodes and apps. I tested drones. I initiated the use of the ultrasonic navigation system (Marvelmind), as inner-navigation system, on COEX Clever. Also I employed Optical flow and ArUco markers for navigation.

I worked at Copter Express for one year, before moving on to working in one of the largest IT outsourcing companies. I develop the architecture, design solutions for software and hardware systems, develop apps and manage cooperation on technical issues with my previous employer (Copter Express) as main contractor.

I also tightly communicated with Sokol company as a contractor and applied my experience in constructing drones and drone charging stations. My responsibilities were to develop and configure software & architecture. I changed drivers of distance sensors, IR-lock sensor (PIXY camera) and precision land pipeline in PX4 firmware. Also I solved the problem of capturing

frames from few cameras in high speed definition and saving it to JPEG container with additional EXIF information such as: speed, course, GPS HDOP, GPS coordinates, timestamp and etc. The new image was developed for the telecommunication module with tiny-configured network. Also I added the Wi-Fi broadcast technology there. It's working on communication RAW packets and it used external library for chipper. It let to creation of a network between telecommunication modules in Krasnodar, Raduzhnyy cities and server on DigitalOcean. And I managed tasks of drones in real time at different segments.

My initial knowledge of AR come from my friends in the industry, who praised it as a very interesting American company to work at. After doing my own research, I am certain that I want to work in American Robotics, because the concept of Robot-as-a-Service is very appealing and familiar to me. I want to build on my experience of making solutions for systems integrations, push myself further and do real practical and cool solutions for people in industries of agriculture, energy, security!

I have skills in programming (worked with PX4, ROS, web-apps, wrote on C++ (junior or non-production apps, exclude PX4), Python (middle), unix&bash (middle) and another languages. You can check my projects on Github). I understand basics logic in electronics & mechanics (I know how to handle a hammer). I have drone piloting skill (I can intercept autonomous drones in tests). I have driver's license if need to travel somewhere.

I see myself useful in developing and configuring architecture, testing solutions, developing software. I open to education and ready to solve interesting tasks. I do not like sitting in one place and I want to get real professional progress.

Education

B.Sc. in Computer Science, Samara National Research University
Thesis: Development of automated control system unmanned aerial vehicle.
It's the quadcopter with Raspberry Pi as companion computer. Software is Telegram messenger's bot with the state-machine. More info there: https://github.com/urpylka/autocopter.

Language skills

English: Intermediate
Russian: Native

Work experience

2019 – Present   **Senior developer** at R&D department of Sibintek – one of the largest IT outsourcing companies (Moscow, Russia)
- Development of software for software and hardware systems (unmanned aerial vehicle, charging station, telecommunication module, remote VPN-server)

- Development on Arduino for management few stepper motors
- Technical consultation of managers, contractors
- Monitoring trends of the global autonomous drone market and adjacent technological industries
- Development of telecommunication module hardware
- Making work plans
- Introduction of a version control system into the project
- Producing technical documentation

2018 – 2019   **Developer** at Laboratory of visualisation "Sphere", Sibintek (Moscow, Russia)

- Development of software for syncing photo-, video- data.
- Development of architecture software and hardware systems (unmanned aerial vehicle, charging station, telecommunication module, remote VPN-server)
- Control and testing unmanned aerial vehicles
- Work coordination by technical thread with contractors

2017 – 2018   **Programmer-developer** at Copter Express Technologies – the biggest manufacturer of drones in country (Moscow, Russia)

- Hardware integration on drones
- Development of software for new operating conditions
- Drone piloting tests
- CI&CD project integration
- Support of OpenSource project
- Configuring and testing in-door systems of navigations: Marvelmind, Optical flow, ArUco markers

2014 – 2015   ***SRE + Web-developer*** at Samara National Research University (Samara, Russia)

- Developing several modules of university management information system (LAMP stack, Adobe Flex)
- Maintained and supported hosting (FreeBSD, CentOS, Apache, MySQL, Bind)

Portfolio

- **COEX CLEVER Builder (CI/CD)** – building system of preconfigured OS-images and delivering system those images to GitHub, used in **COEX CLEVER**
https://github.com/CopterExpress/clever/tree/master/builder
Also it consists utility **img-tool**. It allows to execute operations with OS-image`s files transparently
https://github.com/urpylka/img-tool

- **jenkins-github-webhook-build-trigger-plugin (CI/CD)** – **Jenkins** plugin (Java), fork another opening project changed to work w any **Github Webhooks** (used in first version of **COEX CLEVER Builder**)
  https://github.com/urpylka/jenkins-github-webhook-build-trigger-plugin
- **VPN Bundle** – bundle consist: script for installing connection manager, users manager CLI (for libreswan, xl2tpd)
  https://github.com/urpylka/vpn_utils
- **docker-aptly** – preconfigured docker container with aptly-environment and ngnix web-server as Debian repository
  https://github.com/urpylka/docker-aptly
- **modem_keeper** – the tiny script for manage internet connection via mobile modem
  https://github.com/urpylka/modem_keeper
- **filesync** – async system of synchronisation files (with automatic reconnections if fell) on Python
  https://github.com/urpylka/filesync
- **simple-web-engine** – simple web-engine on PHP for personal blog. Supplied as docker-compose (MariaDB, PHP-FPM, Nginx и phpmyadmin). Now it have been developing from times to times.
  https://github.com/urpylka/simple-web-engine
- **docker-nginx-reverse-proxy** – simple preconfigured container for startup reverse-proxy
  https://github.com/urpylka/docker-nginx-reverse-proxy
- **capture-module.py** – utility for photo-shooting with high rate by few cameras
  https://gist.github.com/urpylka/a7258745aed09104332990ad3e1a03d2
- **Actuator** – library for using several different motors as actuators in one thread. It used in one of charging station (C++, Arduino)
  https://gist.github.com/urpylka/14664fa7db9f300195f4bbcde1b178e3

Achievements

- **3rd place at Hackathon Smart Car by StarLine, Saint Petersburg 2018**
  https://robofinist.ru/event/info/media/id/239 in Russian

- **1th place at MAAXX Europe competition, Bristol 2018**
  https://mikeisted.wordpress.com/2018/04/05/maaxx-europe-2018-dronejam-coding-masterclass/
  https://info.uwe.ac.uk/news/uwenews/news.aspx?id=3776

Other

- From childhood I enjoy soldering simple electronics schemes
- I have been developing drones in the university (made a few prototypes) since 2012
- 2017 – The head of Robotics community in Samara Nation Research University (development of a methodological program, common questions, team-building, finance, organised events)