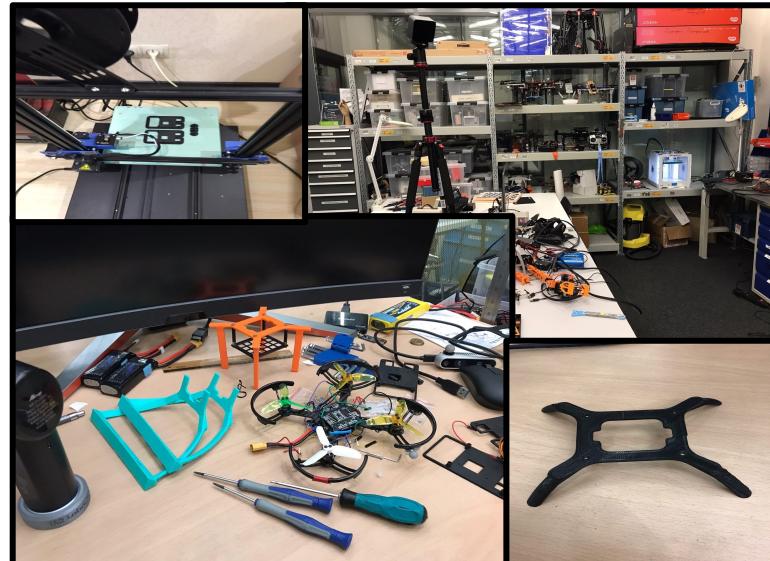
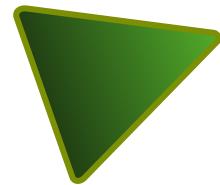


Summer School 2022: Drone restyling, solving technical problems for UAVs and other interesting technological challenges, my promising project, recent achievements

Project TA:	German Yangalin 2 nd year student of BMSTU, Aerospace Engineering
Scientific adviser:	Aleksey Fedoseev 3 rd year PhD student Engineering Systems
Project Supervisor:	Dzmitry Tsetserukou Associate Professor



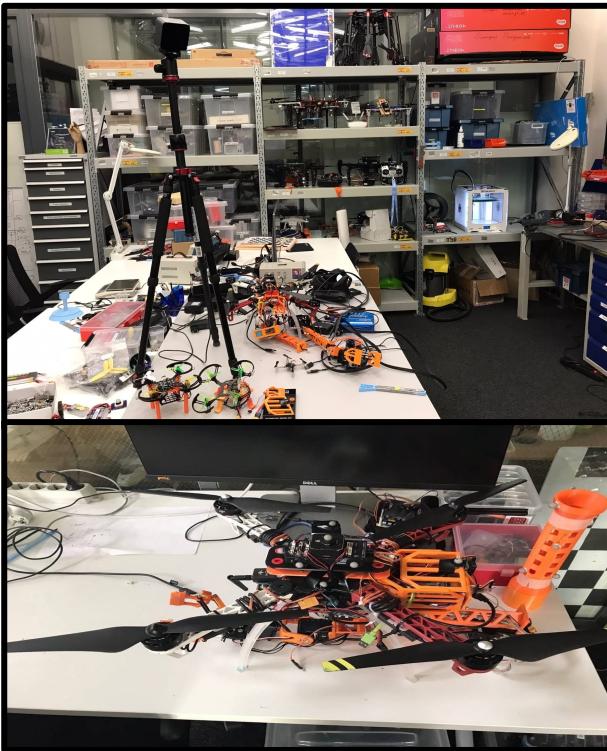
Project description



Skoltech

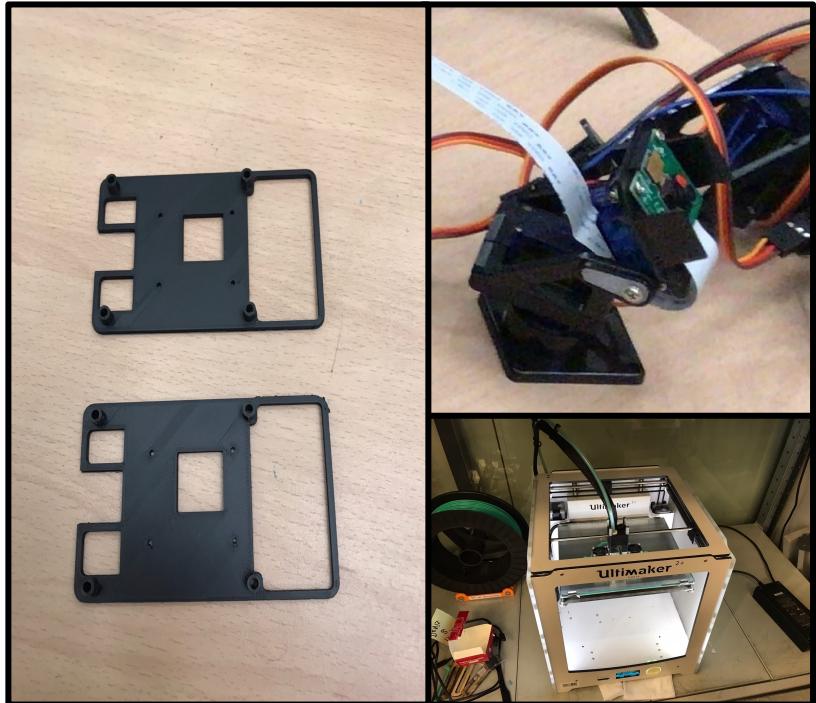
ISR Lab Skoltech

- Allowed to complete almost all tasks
- Ability to use high-tech equipment
- Opportunity to consult with leading scientists and graduate students of Skoltech
- Ability to use electronic components, mechanics and sensors
- Ability to work around the clock
- Convenient location and accessible environment for creation
- New ideas, creation of technological projects and etc.



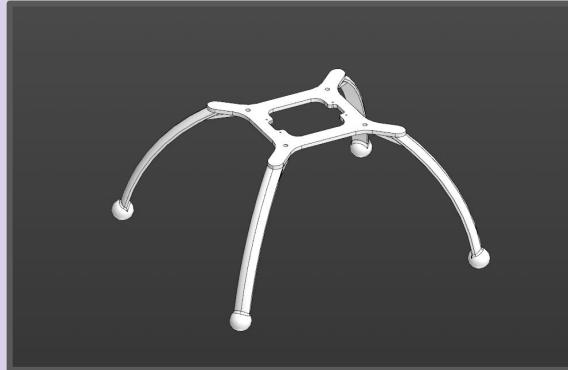
Targets and goals

- Aircraft body design
- Creating a Digital Twin
- Strength analysis
- Prototyping
- Assembling and configuring the camera control bracket
- Raspberry Pi Bracket Design
- Component testing
- Case testing of various plastics (PLA, ABS)
- Product processing
- UAV flight
- UAV assembly and etc.

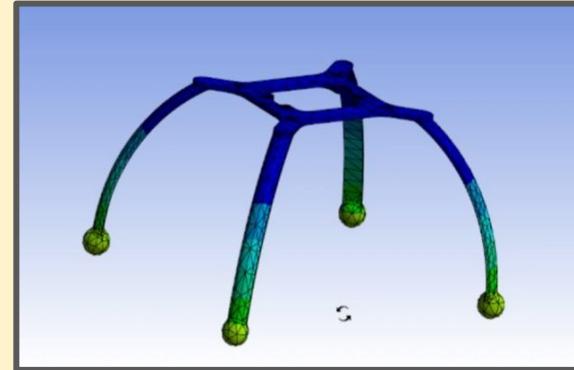


First hull version

UAV Digital Twin (KOMPAS-3D)



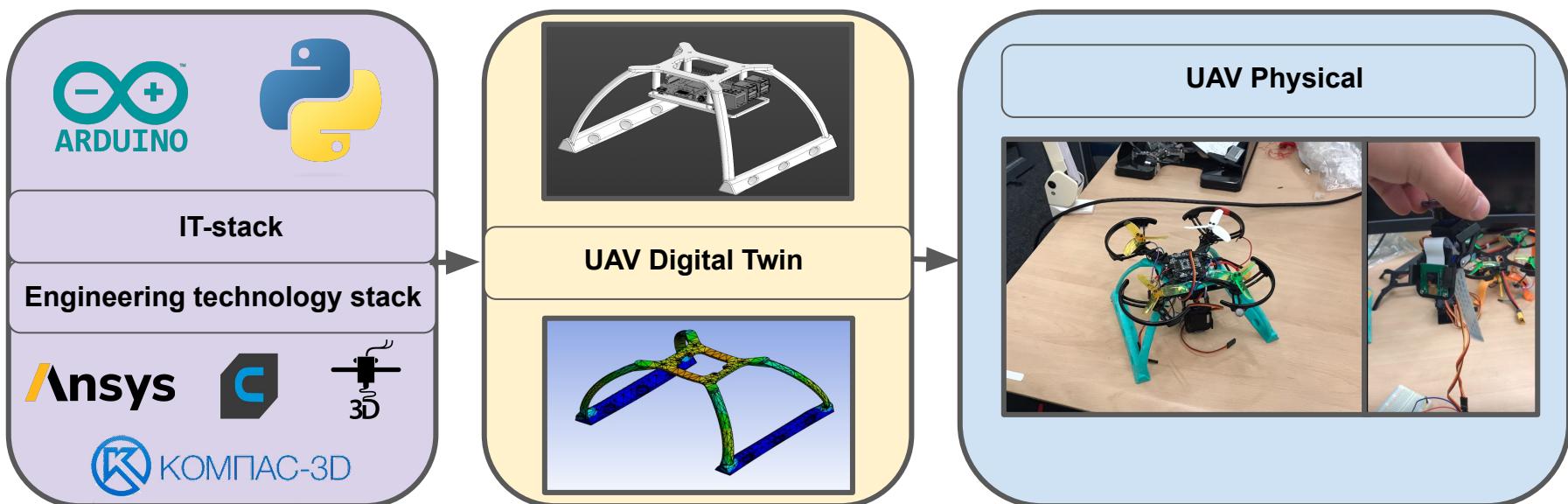
UAV Digital Twin (Ansys)



UAV Physical



Systemology of engineering tasks and technologies



All project files



[Yandex.Disk](#)

Additional tasks and projects in the UAV Laboratory Skoltech, Motivation

Skoltech



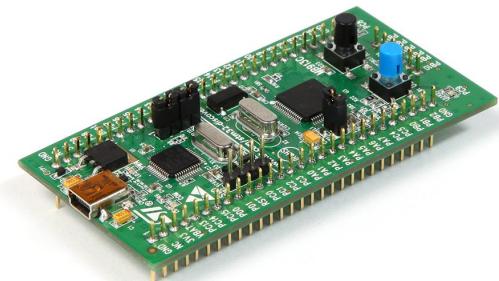
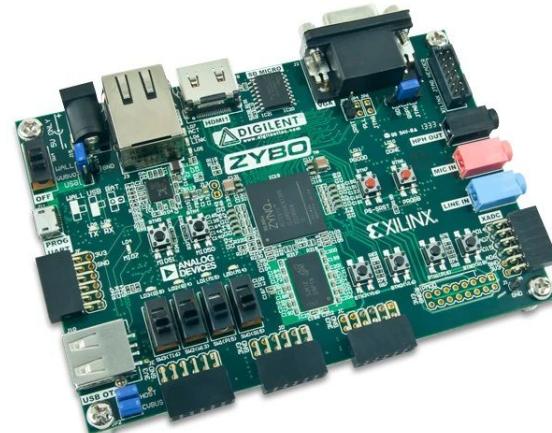
Motivation to study

- FPGA
- DSP
- STM32
- ROS
- CV
- AI/DS/ML
- To create a UAV
- Design of aerospace complexes
- Mathematical modeling
- Digital Twin
- Intelligent control systems
- Flight dynamics and autonomous control
- Patent and scientific analytics
- Aerodynamics, strength and thermal conditions of aircraft

ROS



TensorFlow



Embedded task at the UAV Lab

- Run ArduPilot on STM32 from Alexey Fedoseev
- Test the operation and successfully launch on the UAV



**Additional tasks in other Skoltech labs,
which i can help solve**

Skoltech



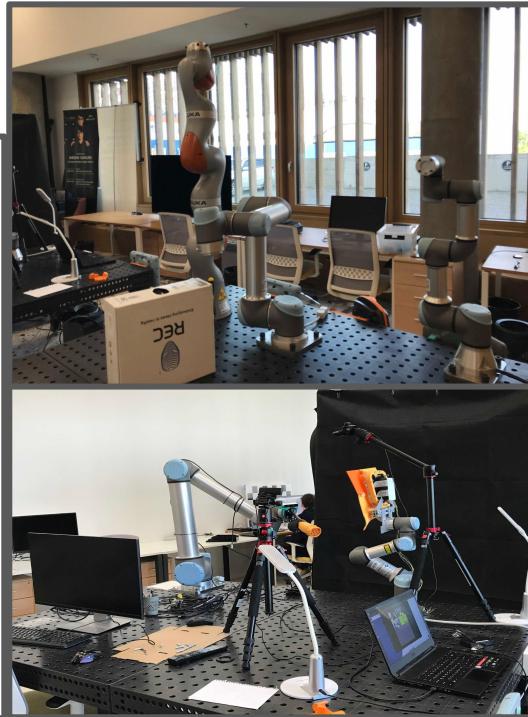
Electrical and strength tasks for Hermes

- Optimization of the layout of electronic equipment
- Application of FPGA and STM32 for specialized tasks for the rover
- Design of additional electronics
- Mathematical modeling: strength, electromagnetic, thermal analysis and others
- Design of an automatic control system



Strength problems and related FPGA for manipulators

- Design of a special part for an automatic filling station
- Application of FPGA and STM32 for specialized tasks for the manipulator
- ACS design
- Mathematical modeling: strength, electromagnetic, topological and other analyzes and etc.

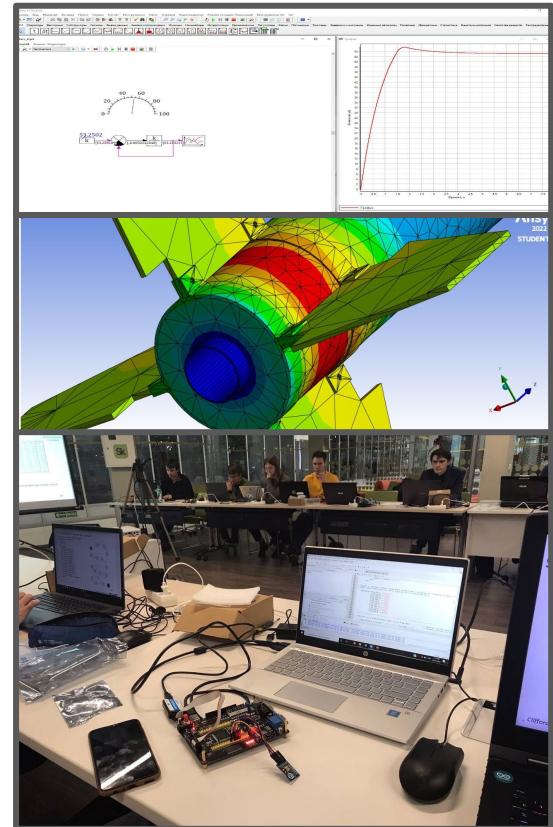


Additional help and support

I am also ready to promote and help, develop together with other undergraduates, graduate students and leading employees of Skoltech, publish in international peer-reviewed journals, apply for patents, implement advanced developments and invent technological solutions.

I like to solve complex technical problems, to create and find hidden patterns in scientific and technical fields, to find new promising scientific fields.

And I will always be glad for new opportunities for cooperation and partnership, finding common ground with Skoltech innovators.



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