



## Andrei - Cosmin JITARU

Date of birth: [REDACTED] | Nationality: Romanian | Gender: Male |

Phone [REDACTED] (Mobile) | \_\_\_\_\_ |

Website: <https://ajitaru.aimultimedialab.ro/> | Website:

<https://www.researchgate.net/profile/Andrei-Jitaru> |

### WORK EXPERIENCE

01/02/2022 – CURRENT Bucharest, Romania

#### ARTIFICIAL INTELLIGENCE ENGINEER LOW ENFORCEMENT AGENCY

##### Responsibilities:

- implementation of various deep learning-based architectures for surveillance scenarios (i.e. crowd and person analysis, object detection etc.).
- responsible for front-end and back-end development of AI solutions.
- exploitation of imagery analytics tools for AI-related tasks.
- testing and evaluation of AI-based solutions.
- development of technical requirements for surveillance AI-based solutions.

##### IT skills:

- Python, PyQT, Ajax, Javascript, HTML, CSS, Ananconda env

**Research domain:** Surveillance Systems

01/08/2018 – 01/02/2022 Bucharest, Romania

#### SCIENTIFIC RESEARCHER MILITARY EQUIPMENT AND TECHNOLOGIES RESEARCH AGENCY

**1st October 2020 - 1st February 2022** Empowered Chief of Command and Control Autonomous Flight Systems Laboratory

**1st April 2020 - 1st October 2020** Empowered Chief of Optoelectronic Laboratory

**1st October 2018 - 1st April 2020** Scientific researcher in Armament Systems Laboratory

##### Responsibilities:

###### • IT-related:

- development of deep learning-based project for imagery analytics purpose (including dataset development, architecture implementation, user interface development) 2019-2022
- ablation study of various object detection algorithms in complex scenarios 2019-2020
- development of multi-class prediction dataset for engine state estimation based on laboratory measurements results of critical components (i.e. oil, fuel etc.) 2021
- elaboration of a study for complex situational awareness datasets development and pre-processing techniques 2020

###### • Defence systems-related:

- assure expertise in optoelectronics and robotized armament systems (turrets) during national defence projects 2019-2022
- principal expert on acceptance testing phases of integrated optoelectronics and robotized armament systems (responsible with testing of integrated situational awareness management software) 2019-2022
- elaboration of technical studies and of technical specifications (technical requirements) for optical defense systems, optoelectronics defence systems, intelligent robotized armament systems mounted on various vehicles platforms (wheeled vehicles 4x4/8x8, tracked vehicles) 2018-2022

- elaboration and execution of testing scenarios for optoelectronics components integrated along robotized platforms 2019-2022
- development and implementation of a solution for on-duty extension for EOD robotized platforms 2019-2021

**Other national representative responsibilities:**

- software integration specialist on Romanian targeting capabilities team.
- national defense representative at NATO Scientific and Technology Organization level on artificial intelligence and optronics.
- technical expert on elaboration committee of defense national research strategy.

**Research domain:** National Security and Defence System

**Business or Sector** Professional, scientific and technical activities |

**Department** Command and control UAV Systems | Optoelectronic Systems Laboratory |

**Address** 16 Aeroportului St., 077025, Bucharest, Romania | **Email** [ajitaru@acttm.ro](mailto:ajitaru@acttm.ro) | **Website** <https://www.acttm.ro/>

29/07/2016 – 01/08/2018 Bucharest, Romania

**SCIENTIFIC RESEARCH ASSISTANT** MILITARY EQUIPMENT AND TECHNOLOGIES RESEARCH AGENCY

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Scientific Research Assistant of Armament Systems laboratory of METRA.

**Responsibilities:**

- design and development of a point-to-multipoint communication system for EOD activities.
- elaboration of testing and evaluation reports for optical, optoelectronics and integrated defence systems.
- execution of testing and evaluation plan for optical, optoelectronics and integrated defence systems.

Technical skills achieved:

- working with special instrumentation for optical and optoelectronics equipments.
- working with national, European and NATO standards.

**Research domain:** National Security and Defence System

**Business or Sector** Professional, scientific and technical activities | **Department** Armament Systems Laboratory |

**Address** Str. Aeroportului, nr. 16, Clinceni, Ilfov, 077025, Bucharest, Romania | **Website** [www.acttm.ro](http://www.acttm.ro)

● **EDUCATION AND TRAINING**

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01/10/2018 – 12/2023 Bucharest, Romania

**PHD STUDENT** University Politehnica of Bucharest

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**Domain of study:** Electronics, Telecommunications and Information Technology

**Main research directions:**

Crowd analysis in high density areas 2022

- developing of data collection protocol.
- implementation of various detection and regression-based architectures for crowd counting task.

Imagery analytics 2020 - 2021

- implementation of several object detection algorithms for complex aerial to ground scenarios.
- developing of a new object detection dataset for aerial surveillance systems.
- developing of an end-to-end surveillance systems for large areas analytics from aircraft presence point of view.

Visual speech recognition 2018 - 2020

- developing of new architecture in order to improve under-resourced language lip-reading performances;

- implementation of pre-processing tools for visual speech recognition dataset development.
- developing of new in the wild and lab data collections for visual lip-reading analysis.

**Address** Splaiul Independenței nr. 313, 060042, Bucharest, Romania | **Website** <https://www.aimultimedialab.ro/> |

**Field of study** Software and applications development and analysis | **Final grade** PhD | **Level in EQF** EQF level 8 |

**Thesis** Machine Learning – based Visual Analysis of Human-to-Human Interaction

01/02/2021 – 18/03/2021 Bucharest, Romania

**GRADUATION DIPLOMA** Military Technical Academy "Ferdinand I"

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Course title: **Advanced logistic course for engineers**

**Address** Bulevardul George Coșbuc nr. 39-49, Sector 5, 050141, Bucharest, Romania | **Website** <https://mta.ro/>

01/10/2016 – 08/03/2018 Bucharest, Romania

**MASTER OF SCIENCE DIPLOMA** Military Technical Academy

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On 1st of October 2016 I started the "**Applied electronics in robotics and automation for security and defence**" master programme.

During classes I have gained knowledge in the following domains:

- design and structural analysis of some structural components of robots on specialized software (Catia, ANSYS);
- programming elements for different types of controllers (Arduino, Raspberry Pi - Python);
- sensors and transducers with military and civilian applications;

Master thesis title: **Real-time video tracking algorithms using Raspberry Pi**. The main objectives are:

- tracking a ROI using Python;
- applying the tracking algorithm on an embedded system (Raspberry Pi);
- developing an experimental model to test the tracking algorithm: a tracked vehicle with a wide angle Raspberry Pi camera mounted on it.

**Address** Bd. George Coșbuc, 050141, Bucharest, Romania | **Website** [www.mta.ro](http://www.mta.ro) |

**Field of study** Software and applications development and analysis | **Final grade** MSc | **Level in EQF** EQF level 6 |

**Thesis** Real-time video tracking algorithms using Raspberry Pi

01/02/2017 – 28/04/2017 Bruxelles, Belgium

**ERASMUS+ TRAINEESHIP CERTIFICATE** Royal Military Academy

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The project title: **Detection and localization of people using aerial images**

Final evaluation: **Very good**

The project has accomplished all the three parts of a scientific research like: documentation, theoretical studies and experimental studies.

The main subject of the project was to developing an algorithm to geo-localize an previously detected (using an detection algorithm) target.

The main application of the project should be: UAV photogrammetry, rescue mission using RPAS (in both scenario - maritim and ground scenario).

The research fields of the project were: aerial photogrammetry and image processing.

**Address** Hobbemastraat 8, 1000, Bruxelles, Belgium | **Website** [www.rma.ac.be](http://www.rma.ac.be) | **Level in EQF** EQF level 7

01/10/2012 – 29/07/2016 București, Romania

**ENGINEER DEGREE. VALEDICTORIAN ON ASCF SPECIALIZATION** Military Technical Academy

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Specialization: **Armament, artillery equipment and firing control systems**

General qualifications:

- Electrotechnics;
- Electronics (electronic components);
- Numeric integrated circuits;
- Robotics;
- Explosion physics;
- Interior ballistics, exterior ballistics;
- Detonics;

- Mechanisms for automatic weapons;
- Artillery munition and launching installation;
- Analysis of explosion problems on PC specialized software;
- Resolve flow problems in specialized software (Fleunt);
- Dynamic analysis to solve structural problems;
- Numerical simulation (Autodyn);

Vocational aptitude:

- organizational competencies;
- efficiency in communication in a lot of types of activities;
- professionalism in various scientific documents (articles, report, paper);
- competence to follow NATO standards and make reliable conclusions (especially standards which describe testing method of energetic materials).

**Address** Bd. George Coșbuc, nr. 39-49, 050141, București, Romania | **Website** [www.mta.ro](http://www.mta.ro) | **Level in EQF** EQF level 6

06/07/2015 – 30/09/2015 Hrochův Týnec, Czechia

**ERASMUS+ TRAINEESHIP CERTIFICATE** OZM Research s.r.o

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Title of the research project: "**Heterodyne velocimetry technique. Shock waves at detonation of different types of explosives**"

Main subject/occupational skills covered:

- usage of special optic fibers for measuring the high speed on small time scale;
- testing of plastic explosives at electrostatic discharges (validation of an American standard);
- simulation of the detonation phenomenon and shock waves effect using specialized ANSYS software.

\* Mark of the final evaluation: EXCELLENT.

**Address** Blížňovice 32, 538 62, Hrochův Týnec, Czechia | **Website** [www.ozm.cz](http://www.ozm.cz) | **Level in EQF** EQF level 6

03/07/2014 – 30/09/2014 Hrochův Týnec, Romania

**ERASMUS TRAINEESHIP CERTIFICATE** OZM Research s.r.o

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Title of the research project: "**Study of fragmentation of reinforced concrete plate at detonation of plastic explosives**"

Main subject/occupational skills covered:

- accomplish the setup of each test configuration;
- design of a device that can measure the limits concentrations of flammability of liquid substances;
- work with plastic explosives (C4, Semtex H), pyrotechnic composition, PETN, etc;
- get pictures from recorded videos taken with high speed camera.

\* Mark of the final evaluation: EXCELLENT.

**Address** Blížňovice 32, 538 62, Hrochův Týnec, Romania | **Website** [www.ozm.cz](http://www.ozm.cz) | **Level in EQF** EQF level 6

11/03/2009 – 08/04/2009 Bucharest, Romania

**GRADUATION CERTIFICATE** AGENȚIA NAȚIONALĂ ANTIDROG, Volunteer training program

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General competencies:

- competence to expose problems caused by drugs usek, like medical, psihological, psiho-social problems
- competence regarding information with preventively purpose at 9 grade and 10 grade.

**Address** Bd. Unirii, nr. 37, Bucharest, Romania | **Website** [www.ana.gov.ro](http://www.ana.gov.ro)

15/09/2008 – 01/05/2012 Breaza, Romania

**BACCALAUREATE CERTIFICATE** Colegiul Militar Liceal "Dimitrie Cantemir"

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General competencies:

- mathematics;
- informatics,
- high sports abilities.

Vocational aptitude:

- capacity to work in groups;
- efficiency in communication;
- desire continuous improvement of knowledges.

**Address** Str. Republicii, nr. 75, 105400, Breaza, Romania | **Website** [www.cantemircml.ro](http://www.cantemircml.ro) | **Level in EQF** EQF level 6

**SC-900: Microsoft Security, Compliance, and Identity Fundamentals**

Field of study IT

**LANGUAGE SKILLS**Mother tongue(s): **ROMANIAN**

Other language(s):

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken production	Spoken interaction	
<b>ENGLISH</b>	B1	B1	B2	B2	B2
<b>FRENCH</b>	A1	A1	A2	A2	A1

Levels: A1 and A2: Basic user; B1 and B2: Independent user; C1 and C2: Proficient user

**DIGITAL SKILLS**

IT

Python and PyQT | Basic knowledge of Javascript AJAX JSON XML | Programming: C\C++ | Windows Linux OS | Programmin language MATLAB

3D CAD CAM

Advanced designing skills using AutoCAD and Solidworks | ANSYS WORKbench

**ADDITIONAL INFORMATION****PUBLICATIONS****Publications****- Publication:**

- Ștefan, Liviu Daniel, Stanciu, Cristian, Dogariu, Mihai, Constantin, Mihai Gabriel, Jitaru, Andrei Cosmin and Bogdan Ionescu, **Deepfake Sentry: Harnessing Ensemble Intelligence for Resilient Detection and Generalization**, in University Politehnica of Bucharest Scientific Bulletin Series C-Electrical Engineering and Computer Science, 2023.
- Constantin, Mihai Gabriel, Dogariu, Mihai, Jitaru, Andrei Cosmin and Bogdan Ionescu, **Assessing the Difficulty of Predicting Media Memorability**, 20th International Conference on Content-based Multimedia Indexing, CBMI 2023.
- Jitaru, Andrei Cosmin and Bogdan Ionescu, **A Collection of Still Images for Coherent Crowd Analysis**, Proceedings of 1st Doctoral Symposium on Electronics, Telecommunications & Information Technology, CEUR Workshop Proceedings, 2023.
- Jitaru, Andrei Cosmin and Bogdan Ionescu, **High Density Crowd Scene Detection in Untrimmed Streaming Videos for Surveillance Purpose**, 15th International Conference on Electronics, Computers and Artificial Intelligence, ECAI23.
- Jitaru, Andrei Cosmin, Barbu, Cosmina Elena and Bogdan Ionescu, **Deep Learning-based Object Searching and Reporting for Aerial Surveillance Systems**, COMM22, 4th International Workshop on Research & Innovation for Secure Societies (RISS22).
- Jitaru, Andrei Cosmin and Bogdan Ionescu. **Toward Language-independent Lip Reading: A Transfer Learning Approach**. IEEE International Symposium on Signal, Circuits & Systems, ISSCS2021.
- Jitaru, Andrei Cosmin, Șeila Abdulamit, and Bogdan Ionescu. **LRRo: a lip reading data set for the under-resourced romanian language**. Proceedings of the 11th ACM Multimedia Systems Conference. 2020.
- C. Plesa, N. Guzulescu, A. Jitaru, **Evaluation of chalcogenide lenses used in thermal vision systems**, Chalcogenide Letters 14(10):431-437 October 2017;

**- Publication on conference proceedings:** A. Jitaru, P. Șomoiag, **Check valve system of bore evacuator mounted on barrel cannon of Romanian tank TR-85-M1**, The official catalogue of the "Cadet INOVA" Exhibition Research and Innovation in the Vision of Young Researchers, 1st edition - Cadet INOVA'16, ISSN 2501-3157

Check research publications: <https://www.researchgate.net/profile/Andrei-Jitaru>

## **DRIVING LICENCE**

**Driving Licence:** A

**Driving Licence:** B

## **CONFERENCES AND SEMINARS**

### **Other conferences during EQF Level 6 and 7**

- Participation at International Conference on Legal, Effective, Safe and Secure use of Civil RPAS, Constanța 2016: **"Aerial/terrestrial drone for day/night surveillance;**
- Participation at International Students Conference CERC 2016, MTA, Bucharest: "Specific parameters of bore evacuator system of TR-85-M1 Romanian tank barrel";
- Participation at **The International Student Innovation and Scientific Research Exhibition "Cadet INOVA'16", Sibiu:** "Check valve system of bore evacuator system mounted on TR-85-M1 Romanian tank barrel";
- Participation at International Students Conference CERC 2015, MTA, Bucharest: *"Research on plastic explosives detonation in proximity of reinforced concrete plates";*
- Participation at International Students Conference SECOSAFT 2015, Sibiu: *"PDV technique used for measuring the spall velocity of blasting loaded concrete slab as effect of shock waves at plastic explosives detonation";*
- Participation at International Students Conference SECOSAFT 2014, Sibiu: *"Experimental and theoretical approaches aimed at developing Romanian blast simulators ";*
- Participation at International Students Conference CERC 2014, MTA, Bucharest: *"The battlefront between the two economic organizations of the European continent C.A.E.R. and C.E.E.", "Initiative to increase the nowadays society's security against terrorism by researching in blast simulators domain";*
- Participation at International Students Conference CERC 2013, MTA, Bucharest: *"Special casting procedure", "Mathematical methods to solve cylindrical thin plates", "Energetic security concept more important than ever".*

## **PROJECTS**

**Analysis application for remote sensing**

**Localization of targets from aerial photography using image processing**

**Image processing tools for integrated weapon system analysis**

**UAS/LLS detection using optoelectronic stabilized system**

**Detonation controll devices via point-to-multipoint communication**

**Testing capabilities development for armored vehicles with integrated weapon systems**

## **ORGANISATIONAL SKILLS**

### **Organisational skills**

- lead a team of 3 to 6 researchers to follow and accomplish the project objectives
- conduct different management positions activities (organization of activities, making schedule of testing and evaluation program etc.)

## **COMMUNICATION AND INTERPERSONAL SKILLS**

**Communication and interpersonal skills** - experience obtained during national project;

- good communication skills in English language, through ERASMUS mobility during the bachelor studies and master studies;
- capacity to take the best decisions in a working group;
- outstanding skills in leadership, organization and planification of working activities;
- adaptability;
- team spirit;
- good verbal and non-verbal communication skills;
- great communicator.

## **PROJECTS PROPOSALS**

**UEFISCDI**

## PED-2021

- elaboration of technical documentation for project proposal for PED-2021 axis competition. The project title: **Smart Convertible and Susceptible Autopilot**, including financial analysis, deliverables and activities schedule. National partner: S.C. NanoTerra S.R.L. - 79.4 of 100 points.

## PED-2019

- elaboration of technical documentation for project proposal for PED-2019 axis competition. The project title: **Passive range imaging system for outdoor applications**, including financial analysis, deliverables and activities schedule. National partner: SysWin Solutions. - 90 of 100 points.

## ORGANIZER

### Organizer

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- DivFusion Task, Multimedia Information Processing for Personality & Social Networks Analysis Challenge, International Conference on Pattern Recognition 2018, <http://chalearnlap.cvc.uab.es/challenge/27/description/>.

## NATIONAL AND INTERNATIONAL PROJECTS

01/01/2021 – 01/02/2022

### Artificial Intelligence Researcher

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#### NATO Science and Technology Organization (NATO STO)

National representative in Sensors & Electronics Technology (SET) panel at NATO STO.

#### Responsibilities:

- finding of national research area interest on SET panel RTGs;
- finding relevant ET or RTGs for national research directions;
- finding national ET/RTGs representative on national relevant tasks;
- assure the national contribution requirements;
- develop the national research strategy of correspondent domains taking into account the NATO countries research vision;
- finding solutions for not standardized artificial intelligence components;
- exploit the benefit of artificial intelligence in military domain from NATO SET outputs.

**Research domain:** Computer Vision and Machine Learning

12/05/2019 – 01/02/2022

### Scientific Researcher

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#### NATO STO, International

Member of NATO STO research task group Automated Scene Understanding for Battlefield Awareness (STO RTG)

**Partners:** NATO countries

#### Responsibilities:

- national representative in RTG group;
- generation of data collection for object detection (VIS and IR);
- implementation of object detection architectures for object detection task;
- involving in joint research activities.

**Research domain:** Computer Vision

11/2020 – 08/2021

### Scientific Researcher

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#### Military Equipment and Technology Research Agency

Member as scientific research assistant on a national project team work, named: **"3S Strategy - Strategia participării naționale în noul context european de coordonare a cercetării în domeniile industriei de securitate și spațiu" - 3S**

**Partner:** ATMFI, ICI, INFLPR, INCAS, COMOTI, UPB, USAMVB, ITA

Project reference: PN-III-P2-2.1-SOL-2020-3-0415

#### Responsibilities:

- providing assistance in defense research direction development, especially related to integrated armament systems and military artificial intelligence domain;

- providing support on defense research strategy embedding;
- identification of relevant research direction corresponding with current European context;
- ensuring the knowledge from defense research strategy development.

Website: <http://www2.rosa.ro/index.php/en/cercetare/proiecte-nationale/4889-proiect-strategie-3s>

2021

## Scientific Researcher

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### Military Equipment and Technology Research Agency

Bucharest, Romania

Member as scientific research assistant on a national project team work, named: "**Assault rifle with self adaptive firing mechanism**" - SAAR

**Partner:** ICPE S.A.

Project reference: PN-III-P2-2.1-PED-2019-1981.

#### Responsibilities:

- design and develop a study of cook-off phenomenon occurrence;
- develop a technical study for temperatures changing phenomenon during firing;
- finding a design solution of automatic/semi-automatic changing for close-bolt to open-bolt functioning system and vice-versa for a specific weapon system;
- develop the requirements of the exploratory model.

**Research domain: Security (Weapon systems)**

23/10/2020 – 01/02/2022

## Scientific Researcher

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### Military Equipment and Technologies Research Agency

Member as scientific research assistant on a national project team work, named: "**Identification and localization of firing positions through air and soil**" - GUNDETECT

**Partner:** The National Institute for Research and Development for Earth Physics

Project reference: PN-III-P2-2.1-PED-2019-0100

#### Responsibilities:

- finding of technical solutions for monitoring and processing of infrasounds, detectable in terrestrial atmosphere;
- development of system requirements and associated testing and evaluation plan;
- generation of testing and evaluation report.

Website: <https://gundetec.infp.ro/index.php>

01/02/2018 – 31/10/2018

## Scientific Research Assistant

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### University Politehnica of Bucharest

Member as scientific research assistant on a national project team work, named: "**Technologies and Innovative Video Systems for Person Re-Identification and Analysis of Dissimulated Behavior**"

**Partners:** UTI Grup, Romanian Ministry of National Defence - Military Equipment and Technologies Research Agency, public beneficiary Protection and Guard Service

#### Responsibilities:

- organizing the people of lip-reading team on data collection activities;
- managing the agreements with international laboratories with important background in visual analysis tasks (VGG Oxford group, VIPL China, Speed Romania);
- reporting of state of art lip-reading DNN architectures;
- developing of Romanian under-resourced language data set for lip-reading task;
- developing an DNN model in order to achieve reliable results on word prediction task using only visual information;
- designing the lip-reading system to be part of a multi-task AI system.

Website: <http://campus.pub.ro/lab7/spiava/consortium.php>

06/09/2016 – 30/09/2017

## Scientific Research Assistant

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## Military Equipment and Technologies Research Agency

Member as scientific research assistant on a national project team work, named: **"Complex optoelectronic system for multispectral surveillance and analysis" - SOIM.**

**Partner:** IOR S.A., University Politehnica of Bucharest

### **Responsibilities:**

- design solutions for carrier vector;
- analysis of multispectral operational needs;
- analysis of the requirements of an online agriculture computer vision application;
- execution of UAV demonstrator;
- execution of UAV demonstrator's design 2D documentation (SolidWorks)
- dissemination of the results at national scientific conferences on UAV systems.

Website: <http://www.acttm.ro/soim/ro/index.php?page=home>

### **Scientific Research Assistant**

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Other research related activities in national projects:

01/09/2017 – 29/12/2017 Military Technical Academy, project title: **"Research, design, development and bench testing of a hybrid reactive propulsion system for space launcher applications area , with innovative inhomogeneous fuel and adaptive electrical control of parameters" - SPECH**

01/09/2017 – 29/12/2017 Military Technical Academy, project title: **"Precise optical alignment systems for spacecraft formation flying and active debris removal" - OASYS**

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