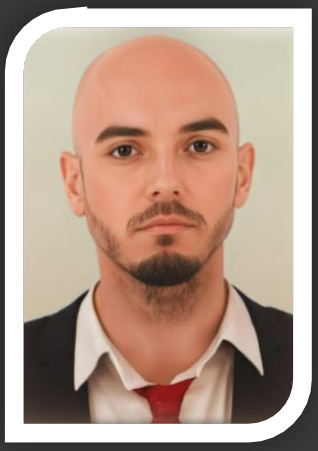


# Yoto Hristov Yotov

Portfolio

## R&D engineer

Mechanical engineer and PhD student at the Institute of Robotics at BAS with over 12 years of experience in design, development, and implementation of technical products and complex engineering systems. Specialized in CAD/CAM/CAE design, CNC technology, tooling development (including injection molds and dies), electronics, PCB design and prototyping. Author of 2 scientific publications and implementer of over 40 independently designed and commissioned engineering products and mechanisms.

The professional experience includes work in scientific institutes (IMCSH-BAS, Institute of Robotics - BAS), manufacturing companies (Walltopia, Milkotester, Nola 7, Microtel) and independent developments with practical application. Participated in projects for the military industry, process automation, prototypes of medical equipment, and entertainment facilities. Combines engineering precision with adaptability and an interest in modern technologies, including Machine Learning and AI

## Contact


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**Email:** jottov@abv.bg
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**Website:** https://yotoyotov.blogspot.com/
**GitHub:** https://github.com/Yoto7
**Linkedin:.** https://www.linkedin.com/in/yoto-yotov/


## Education

**Technical University – Sofia**

- ✓ **MSc:** Computer Aided Design and Mechanical (2011–2014)
- ✓ **Bachelor:** Mechanical Engineering, Polymer Engineering (2007–2011)

**Institute of Robotics at BAS– Sofia**

- ✓ **PhD:** Mechatronic Bio-technological (2024 - present)

## Technical skills

- SolidWorks
- CATIA V5
- AUTO CAD
- Microsoft Office
- ESPRIT CAM
- Altium Designer
- Electronics
- English

## Key skills

✓ **CAD/CAM/CAE**:
SolidWorks, AutoCAD, CATIA V5, Esprit CAM, SprutCAM, Altium Designer

✓ **Mechanical design and manufacturing**:
design, injection molds, dies (including aluminum), custom tooling, 3D modeling, engineering simulations, assemblies

✓ **CNC and CAM technologies**:
CNC programming, G-code, postprocessors, working with lathes and machining centres: lathes - ZIT 500 and ST160, milling machines - MS32 and HURCO VMX 30

✓ **Electronics and PCB**:
PCB design, development with ESP32, sensors, controllers, automation

✓ **Prototyping and implementation**:
3D printing, assembly, testing and deployment in real production conditions

✓ **Software and office skills**:
MS Office, SAP, technical documentation, drawings, specifications, structure tables (BOM)

## Education

**IR-BAS / Doctoral studies** – Mechatronic bio-technological systems
(2024–present)
**Scientific supervisor:** prof. Dr. Velislava Lyubeniva
**Scientific consultant:** Assoc. Prof. Dr. Emil Petrov

**Dissertation Topic:** Design of myoelectric prosthesis for hand with voice command

**Main research areas:**

✓ Design and integration of intelligent mechatronic systems
✓ Signal processing from EMG sensors and biofeedback
✓ Application of neural regulators, machine learning and adaptive algorithms
✓ Modelling limb kinematics and dynamics
✓ Prototyping with microcontrollers (ESP32, Arduino), Altium Designer and 3D printing
✓ Software: MATLAB/Simulink, SolidWorks, Python (with IoT/ML library)

**TU-Sofia / Master** – Computer aided design and Mechanical Engineering Technology (2011–2014)

**Theme of the diploma thesis** Design of injection moulds and development of technology for moulding of body parts from foamed thermoplastic (PE)

**Main subjects studied:**

✓ CAD/CAM/CAE systems: SolidWorks, Pro/ENGINEER
✓ Technologies for precision manufacturing and control
✓ Engineering analysis - strength, thermal and modal simulations
✓ Mechatronic systems and automated lines
✓ CNC programming and computer-aided manufacturing
✓ Metal cutting machines

**TU-Sofia / Bachelor** – Mechanical Engineering and Utilities, Polymer Engineering
(2007–2011)

**Theme of the diploma thesis:** Injection mould for the production of PET bottle blanks

**Main subjects studied:**

✓ Materials Science and Processing Technology
✓ Theory of mechanisms and machines
✓ Resistance of materials
✓ Heat engineering, pneumatics and hydraulics
✓ Machine elements and sizing of assemblies
✓ Polymer engineering
✓ Process and tooling design
✓ Fundamentals of automation and mechatronics

## Professional experience

| | |
|---|---|
| 💼 **Institute of Robotics - BAS** – Assistant/PhD student (2023–present) | ✓ Participation in research and development in the field of bionic systems.<br>✓ Development of a bionic upper limb prosthesis |
| 💼 **Walltopia AD / Safety Engineering** – R&D Designer (2016–2018, 2021–2022) | ✓ Rollglider product development<br>✓ Assessment, improvement and installation of facilities<br>✓ PCB design and 3D visualizations |
| 💼 **Ilinden** – Constructor (2020) | ✓ Development of a control system for industrial burners<br>✓ Prototyping of moulds for aluminium |
| 💼 **Milkotester** – Constructor (2018–2020) | ✓ Development of somatic cell counting devices<br>✓ Design of PCB boards and injection molds<br>✓ Preparation of technical documentation and requests |
| 💼 **Mars Armor** – Constructor (2015) | ✓ Ballistic Plate Test Furnace Design<br>✓ Reverse engineering of military helmets and ballistic shields |
| 💼 **Nola 7**– Constructor (2015) | ✓ Development of a specialised trolley<br>✓ Design of dancing fountain – Varna |
| 💼 **Microtel** – Constructor (2014–2015) | ✓ Design of CNC routers and borers<br>✓ Reverse engineering of details, 3D modeling, drawings |
| 💼 **Institute of Metal Science – BAS**– Technologist/Designer (2011-2014) | ✓ Creating G-codes, setting up CNC machines<br>✓ Product design and engineering simulations |

## Certificates and distinction

- ✓ Electronic Basic – SoftUni, 2019
- ✓ DIY Smart Home Automation – SoftUni, 2019
- ✓ Programming Basics with JavaScript – SoftUni, 2019
- ✓ 2nd place – International Hackathon ActInSpace, 2020
- ✓ AI Basic- SoftUni,2025
- ✓ Programming Basics with Python – SoftUni, 2025
- ✓ Programming Fundamentals with Python - SoftUni, 2025
- ✓ AI Automation - SoftUni, 2025
- ✓ AI for Data Analysis - SoftUni, 2025
- ✓ AI for Education and Self-Education - SoftUni, 2025
- ✓ AI for Images, Video and Audio - SoftUni, 2025
- ✓ AI Privacy, Security and Regulations - SoftUni, 2025
- ✓ Implementing AI in Business - SoftUni, 2025
- ✓ Prompt Engineering - SoftUni, 2025

## Publication

1. Yotov, Y., Petrov, E. (2025).

*Хибридно управление на протеза за горен крайник.*

**Конференция:** *XXXIV Международна научно-техническа конференция „Автоматизация на дискретното производство – АДП 2025"*

2. ***Yotov, Y., Lyubenova, V. (2025).***

*Myo Armband for Upper-Limb Prosthesis Control.*

***Conference:*** *International Conference "ROBOTICS & MECHATRONICS", Sofia, Bulgaria, 5–6 November 2025*

3. ***Yotov, Y., Petrov, E., Lyubenova, V. (2025).***

*Processing and Analysis of EMG Signals from MYO Armband for Upper-Limb Prosthesis Control.*

Journal: *International Journal of BIOautomation*, Institute of Biophysics and Biomedical Engineering – BAS.

## Languages

✓ English language

| Understanding | | Speaking | | Writing |
|---|---|---|---|---|
| Listening | Reading | Participation in the conversation | Self el oral presentation | |
| B1 | B1 | B1 | B1 | B1 |

**Level:** A1/2: Basic level of proficiency – B1/2: Independent level of proficiency – C1/2: Fluent level of proficiency

## Computer skills and competences

| Software / Competence | Level | Experience |
|---|---|---|
| ✓ SolidWorks | Great | 10 years |
| ✓ CATIA V5 | Good | 1 year |
| ✓ AUTO CAD | Very good | 3 years |
| ✓ ESPRIT CAM | Very good | 3 years |
| ✓ SPRUT CAM | Good | 1 year |
| ✓ Altium Designer | Very good | 3 years |
| ✓ SAP | Very good | 4 years |
| ✓ MS Office | Very good | 12 years |
| ✓ Electronics | Very good | 4 years |
| ✓ KeyShot | Very good | 2 years |
| ✓ HTML/CS | Good | 3 years |
| ✓ C / C++ | Good | 3 years |

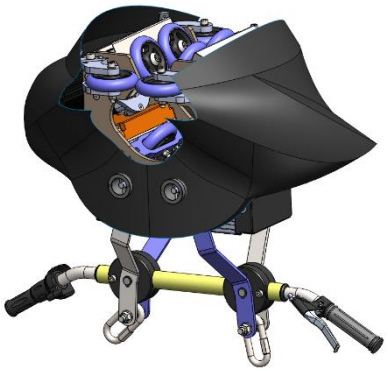
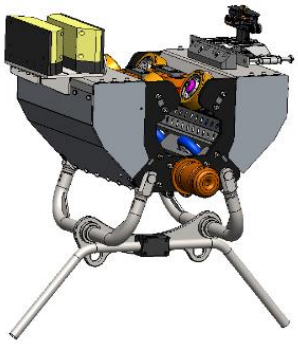
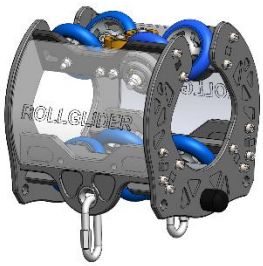
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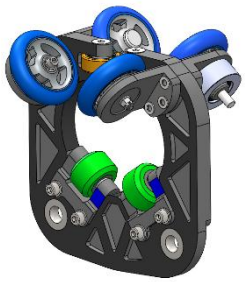
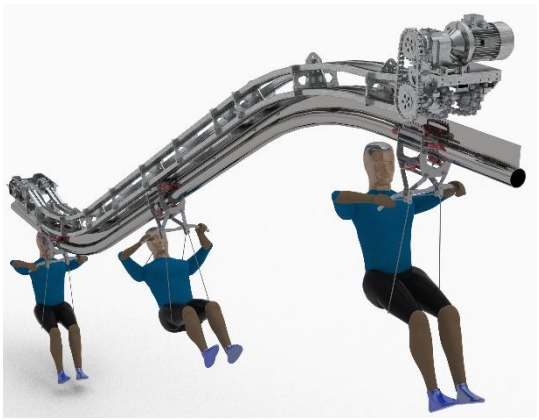
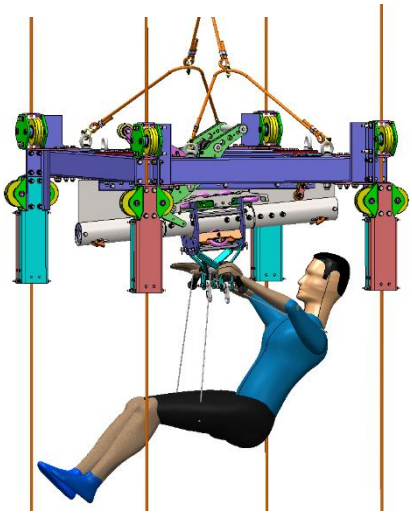
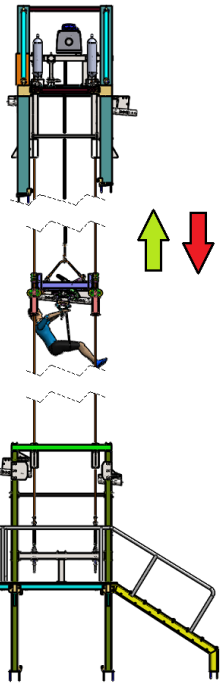
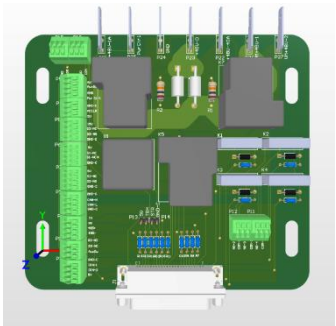
✓ Category B

# Portfolio

**Rollglider Systems**
(*Walltopia, Safety Engineering, 2016–2022*)

✓ **Electric and gravity trolleys** – complete design, testing, electrical integration, implementation in real routes; work on different variants (closed, open, with limiters).
✓ **Magnetic braking system** – design and study of a device based on Foucault's law used for descent braking.
✓ **Vertical and inclined systems for human ascent** – 3D modelling, simulation and installation; implementation of a system with chains and seats for Gatlinburg, USA.
✓ **Connector boards and electrical boxes** – designed and implemented in control systems based on ESP32 and Nextion displays.

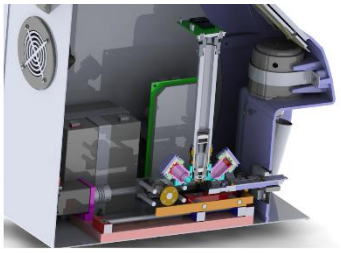
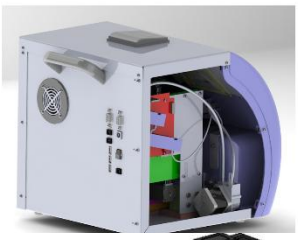
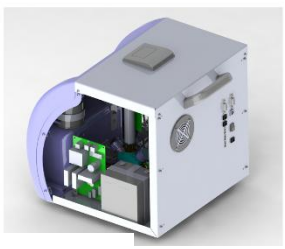




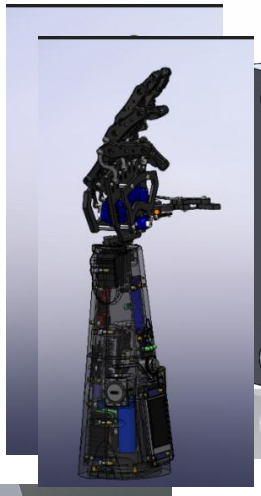
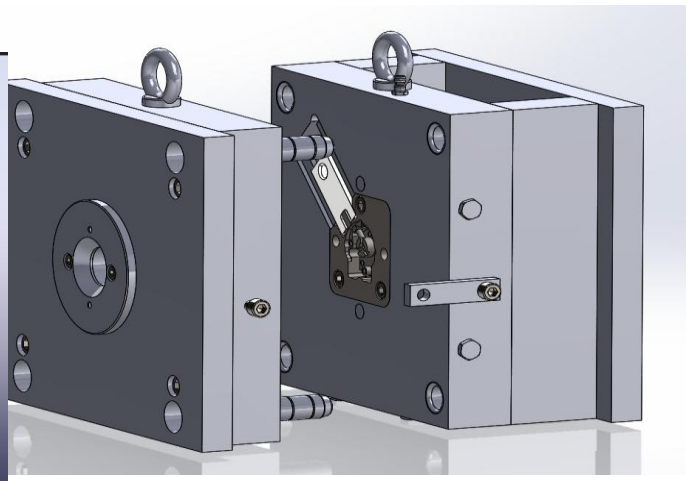






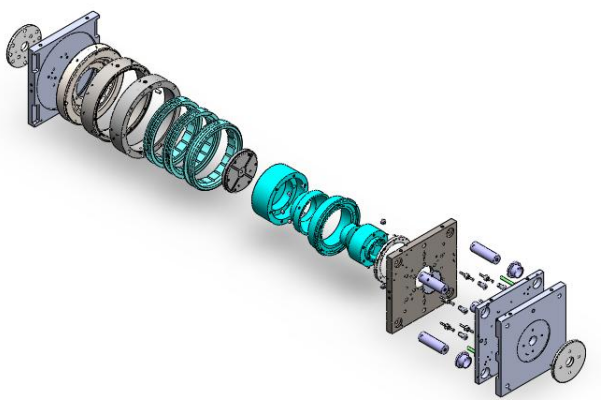

## Portfolio

**Industrial Equipment and Prototypes** (2014–2022)

✓ **Somatic cell counting instruments** (*Milkotester*) – 3D case design, kinematics, PCB boards, automation, sensors, visualization.
✓ **Prototype device for milk analysis and mixing** – mechanism design, housing, ultrasonic module, control.
✓ **Matrices and injection moulds** – design of multi-moulds for hulls (incl. for anti-tank mines); working with billets of aluminium.
✓ **3D printed hull (2020)** – divided into eight parts, assembled, whale-formed and painted for functional test.

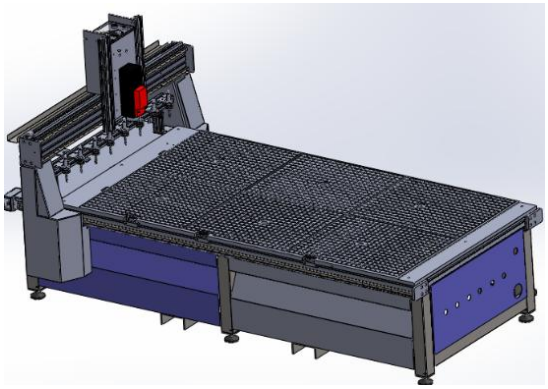




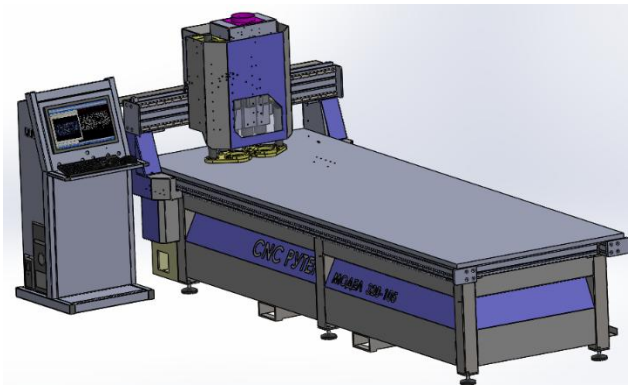



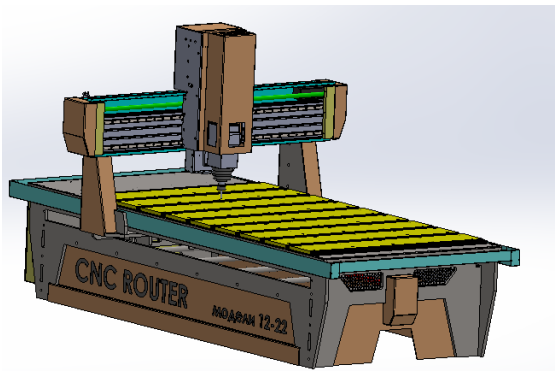
## Portfolio

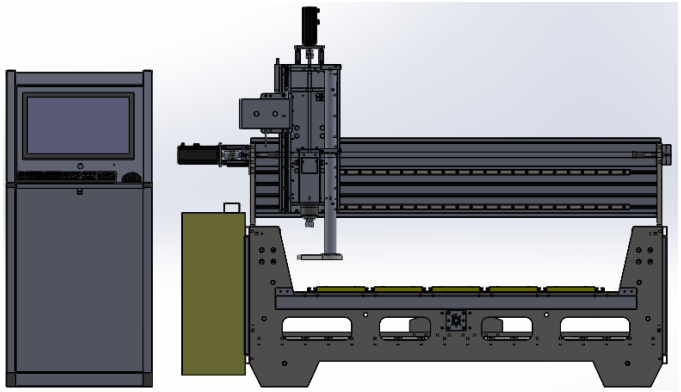
**Machinery and tooling**
(2011–2016)

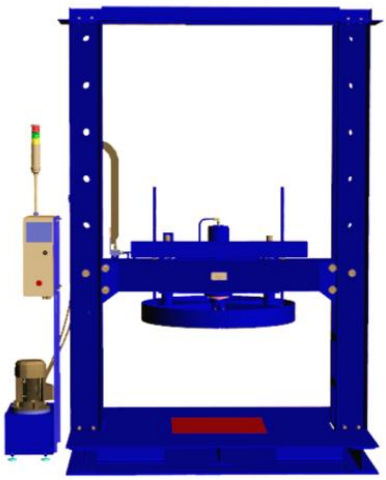
✓ **CNC routers (Microtel)** – reconstruction and redesign of several models, creation of production drawings from AutoCAD sketches.
✓ **CNC boring machine** – own project with automatic tool changing system and pneumatic clamping of the plates.
✓ **Hydraulic press for transformers (Intex)** – mechanical project sent for production within 3 weeks.
✓ **Programming of CAM code (IMCSH-BAS)** – over 50 CAM operations for CNC lathes and milling machines; working with Esprit and SprutCAM.
✓ **Post-processor for CNC carpenter machine** – designed and tested

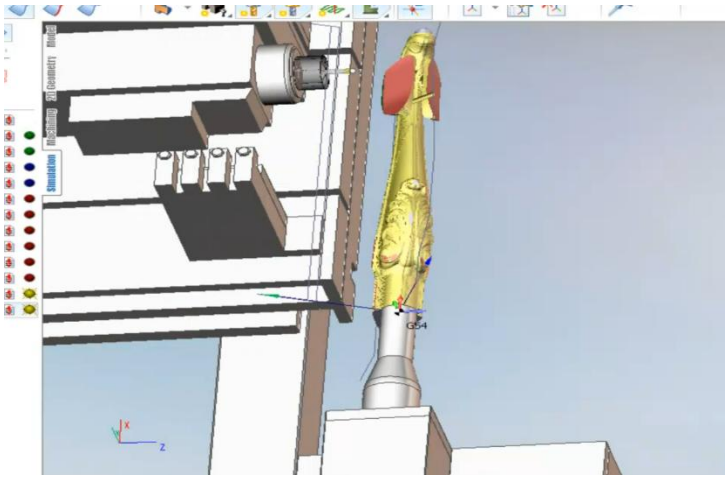










# Portfolio

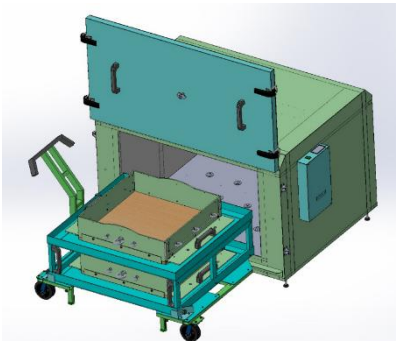
## Military and laboratory equipment



✓ **Ballistic Shields and Helmets (Mars Armor)** – reverse engineering, digitizing, designing a specialized heavy shield cart.
✓ **Ballistic test furnace** – laboratory product for heating plasticine to 37°C; design and manufacture for 24-hour maintenance.
✓ **Hulls for anti-tank mines** – design and tooling for injection molding, 3D models and prototypes created.



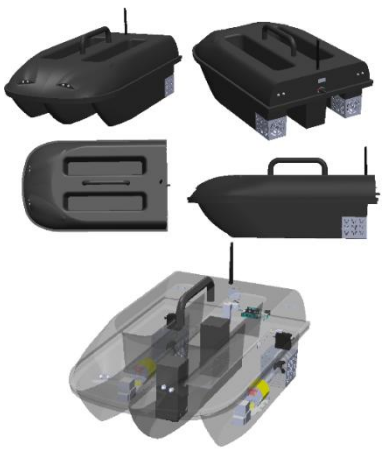




## Other projects







✓ **Dancing fountain in Varna (Nola 7)** – design of the facility for public space, work with hydraulic and lighting systems.
✓ **RS fish power boat (hobby project)** – design, CAD, prototyping and functional zoning of hull, electronics and mechanics.
✓ **Automatic flower watering device (DIY – SoftUni 2019)** – design, programming and manufacture of a mini aquaponic system with controller.

