



BRIGHT project - Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period



Co-funded by the
Erasmus+ Programme
of the European Union

Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period – BRIGHT

2020-1-RO01-KA226-HE-095517

Assoc. Prof.dr.eng. Razvan Pacurar

Department of Manufacturing Engineering,

Faculty of Industrial Engineering, Robotics & Production Management, TUCN, RO



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022



BRIGHT project - Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period

BRIGHT International Summer School on:
3D experience platform for medical applications

18 - 29 JULY 2022

WHO can apply
Bachelor students (BSc)
Master students (MSc)
PhD students

SPECIALIZATIONS:
Manufacturing Engineering
Mechatronics & Robotics
Mechanical & Bio-Mechanical Engineering
Science of Materials
Physics & Chemistry
Medicine & Pharmacy

More details
www.bright-project.eu
Registration until 15th of July 2022

Organized by
Juraj Dobrila University of Pula, Croatia
in cooperation with

Co-funded by the
Erasmus+ Programme
of the European Union

Logos: TECHNICAL UNIVERSITY OF CLUJ-NAPOCA ROMANIA, University of KS, STU, bmplast, bizzcom

1. CAD
2. CAE
3. 3D Printing of medical products
4. Testing of medical products
(3D scanning, mechanical testing)

1. Virtual /Augmented Reality
2. 3D Virtual Platform experience
3. Companies / Medical institutes visits

1. Students presentations / competitions
2. Round tables / workshops
3. Socializing activities

BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

BRIGHT International Summer School 2022 edition - KPIs
60 participants from 10 countries registered on BRIGHT website!!!



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BRIGHT International Summer School – UNIPU – 18 - 29.07.2022



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In cooperation with

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Erasmus+ Programme
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BRIGHT International Summer School on 3D Experience Platform for Medical Applications – 18-29 July 2022

h	Monday 18.07.2022	Tuesday 19.07.2022	Wednesday 20.07.2022	Thursday 21.07.2022	Friday 22.07.2022	Monday 25.07.2022	Tuesday 26.07.2022	Wednesday 27.07.2022	Thursday 28.07.2022	Friday 29.07.2022	h
10	Opening ceremony, participants' presentation, and social activities. Project presentation, program and guidelines for summer school	CAD - Lecture	CAE - Lecture	Laboratory work, 3D printing in laboratory environment	Company visit, professional visit of SME partner in the BRIGHT project	Feedback, progress from W1 and objectives of W2	VR programming applications presentation, case studies	AR programming applications presentation, case studies	School of medicine, University of Pula & METRIS visiting	Final student presentations, closing and awarding ceremonies, BRIGHT final consortium meeting, future perspectives of BRIGHT	10
11		Workshop 3D / Launching of case studies	3D printing - Lecture	Mechanical and medical tests & quality control – lecture		Virtual laboratory BRIGHT platform presentation	Developing VR for the BRIGHT platform	Developing AR applications for the BRIGHT platform			11
12		Lunch & free time	Lunch & free time	Lunch & free time		Lunch & free time	Lunch & free time	Lunch & free time			12
13		Workshop 3D CAD & Progress report	Workshop 3D CAE & Progress report	Workshop 3D Measurement / quality checking / mechanical control		Location: Fratarski otok Lecturing (hospital and clinicians) and socializing	Location: Fratarski otok Lecturing (hospital and clinicians) and socializing	Location: Fratarski otok Progress report, preparing final presentation			Final test and feedbacks
14									14		
15									15		
	WEEK 1					WEEK 2					

Quick overview of the Intellectual outputs related to the BRIGHT project

IO1 - BRIGHT e-learning **support courses for curriculum** aiming to boost the scientific excellence and innovation of 3D printing methods used for developing and producing medical parts in pandemic period (**Prof. Milos Simonovic, University of Nis, Serbia**)

Open access on the Platform?	1. CAD	Univ. of Poznan
	2. CAE	TUCN & University of Nis
	3. Materials Science and Strength of Materials	Univ. of Poznan & Univ Juraj Dobrila
	4. Flexible manufacturing systems	STU Bratislava
Reports?	5. 3D printing and Rapid Tooling methods for medicine	TUCN & University of Nis
	6. Process optimization and software control	University of Nis
	7. Medical Engineering standards and tests	Univ Juraj Dobrila

Starting:
1.03.2021

Template

Content

Deadline:
31.07.2021

For each module according to the skills and competences of the BRIGHT partners consortium, from the **Technical team there will be nominated 1-2 responsible persons** which will be in charge with one module and will need to provide course support for the particular module related to 3D printing methods and the particular applications of these technologies for **producing medical parts** / testing of new materials, etc.

Results reached in the BRIGHT project (new books that were published)

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BOOSTING THE SCIENTIFIC EXCELLENCE AND INNOVATION
CAPACITY OF 3D PRINTING METHODS IN PANDEMIC PERIOD

MODULE 1
CAD

Project Title	Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period 2020-1-RO01-KA226-HE-095517
Output	IO1 - BRIGHT e-learning support courses for curriculum aiming to boost the scientific excellence and innovation of 3D printing methods used for developing and producing medical parts in pandemic period
Module	Module 1 CAD
Date of Delivery	July 2021
Authors	Filip GORSKI Radosław WICHNIAREK Svea MARICIC Nikola VITKOVICH
Version	V1.2, 3.06.2021

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MODULE 2
CAE

Project Title	Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period 2020-1-RO01-KA226-HE-095517
Output	IO1 - BRIGHT e-learning support courses for curriculum aiming to boost the scientific excellence and innovation of 3D printing methods used for developing and producing medical parts in pandemic period
Module	Module 2 CAE
Date of Delivery	July 2021
Authors	Associate prof. dr. eng. Răzvan Păcurar, Associate prof. dr. eng. Nikola Korunovic, Lecturer dr. eng. Cristina Borzan, Lecturer dr. eng. Horca Chezan, Lecturer dr. eng. Vito Cristian
Version	V1, 31.07.2021

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MODULE 3
Material Science & Strength of Materials

Project Title	Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period 2020-1-RO01-KA226-HE-095517
Output	IO1 - BRIGHT e-learning support courses for curriculum aiming to boost the scientific excellence and innovation of 3D printing methods used for developing and producing medical parts in pandemic period
Module	Module 3 Material Science & Strength of Materials
Date of Delivery	July 2021
Authors	Rozsniata LABUDZKI Radosław WICHNIAREK Filip SARENKOWSKI Svea MARICIC
Version	FINAL VARIANT, 20.07.2021

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MODULE 4
Flexible manufacturing systems

Project Title	Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period 2020-1-RO01-KA226-HE-095517
Output	IO1 - BRIGHT e-learning support courses for curriculum aiming to boost the scientific excellence and innovation of 3D printing methods used for developing and producing medical parts in pandemic period
Module	Module 4 Flexible manufacturing systems
Date of Delivery	August 2021
Authors	Peter Kallal, Vanessa Frajola, Mircea Martinescu, Erika Huskova, Andrei Mudrikova
Version	V0, final 02.8.2021

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MODULE 5
3D PRINTING

Project Title	Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period 2020-1-RO01-KA226-HE-095517
Output	IO1 Mapping and scientific literature review on the available skills for Industry 4.0
Module	Module 5 3D Printing
Date of Delivery	July 2021
Authors	Associate prof. dr. eng. Răzvan Păcurar, Associate prof. dr. eng. Nikola Vukovic, Associate prof. dr. eng. Alexandru Mitrescu
Version	Final variant, 18.07.2021

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Course modules prepared by the consortium within IO1 ready to be published as “open book”



Quick overview of the Intellectual outputs related to the BRIGHT project

IO2 - BRIGHT e-toolkit manual for digital learning in producing medical parts by 3D printing methods in the context of the pandemic (**Assoc. Prof. Răzvan Păcurar, TUCN**, project manager)

Open access on the platform?	2 Modules	How to produce skull implants using Selective Laser Sintering + Vacuum casting technologies	TUCN, RO
		How to produce implants using Selective Laser Melting technology	
	1 Module Stereolithography (Digital Light processing method)		Univ Juraj Dobrila, HR
	1 Module Fused Filament Fabrication method		Univ. of Poznan, PL
	1 Module Fused Deposition Modeling (Reprap technologies)		STU Bratislava, SK
Report?	1 Module Rapid Tooling methods		University of Nis, SR
	Real printing and testing of parts		B. M. Plast d.o.o., HR
			BIZZCOM s.r.o., SK

Starting:
1.06.2021

Template

Content

Deadline:
30.11.2021

The partners of the BRIGHT consortium are expected to provide similar modules in relation with the medical sector/3D printing (1 module per partner) by engaging other types of 3D printing that are available and can be used in the medical sector in a similar way.

For each module according to the skills and competences of the BRIGHT partners consortium, from the **Technical team** there will be nominated 1-2 responsible persons which will be in charge with the module and will need to provide the module for the e-toolkit manual.

Results reached in the BRIGHT project (new books that were published)

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CAPACITY OF 3D PRINTING METHODS IN PANDEMIC PERIOD

TOOLKIT 1 SKULL IMPLANTS MADE BY SELECTIVE LASER SINTERING AND VACUUM CASTING TECHNOLOGIES

Project Title	Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period 2020-1-RO01-KA226-HE-495517
Output	IO2 - BRIGHT e-toolkit manual for digital learning in producing medical parts by 3D printing methods in the context of the pandemic
Toolkit	Toolkit 1 Skull implants made by Selective Laser Sintering and Vacuum Casting technologies
Date of Delivery	30 th of November 2021
Authors	TUCN
Version	Final variant

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TOOLKIT 2 DESIGN AND SLM MANUFACTURING OF CUSTOM FACIAL IMPLANT USED TO RECONSTRUCT THE SUPRAORBITAL MARGIN AND ZYGOMATIC BONE

Project Title	Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period 2020-1-RO01-KA226-HE-495517
Output	IO2 - BRIGHT e-toolkit manual for digital learning in producing medical parts by 3D printing methods in the context of the pandemic
Toolkit	Toolkit 2 Selective laser cutting
Date of Delivery	November 2021
Authors	Cosmin COSSMA, Petru BERCE, Nicolae BALC
Version	Final variant

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TOOLKIT 3 FIXATOR MADE BY STEREOLITHOGRAPHY

Project Title	Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period 2020-1-RO01-KA226-HE-495517
Output	IO2 - BRIGHT e-toolkit manual for digital learning in producing medical parts by 3D printing methods in the context of the pandemic
Toolkit	Toolkit 3 Stereolithography (Digital light processing method)
Date of Delivery	November 2021
Authors	Alexandru Mihreanovic, Milan Banic, Nikola Vukovic, Mihai Simionovic
Version	Final variant

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CAPACITY OF 3D PRINTING METHODS IN PANDEMIC PERIOD

TOOLKIT 4 METHODOLOGY OF DESIGN AND RAPID MANUFACTURING OF MID-SURGERY SUPPLIES FOR OTOLARYNGOLOG

Project Title	Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period 2020-1-RO01-KA226-HE-495517
Output	IO2 - BRIGHT e-toolkit manual for digital learning in producing medical parts by 3D printing methods in the context of the pandemic
Toolkit	Toolkit 4 Fused Filament Fabrication + Vacuum Casting
Date of Delivery	November 2021
Authors	Filip GORSKI, Remigiusz LABUDZKI, Magdalena ZUKOWSKA
Version	Final Variant

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TOOLKIT 5 FUSED DEPOSITION MODELLING

Project Title	Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period 2020-1-RO01-KA226-HE-495517
Output	IO2 - BRIGHT e-toolkit manual for digital learning in producing medical parts by 3D printing methods in the context of the pandemic
Toolkit	Toolkit 5 Production of medical parts with use of Fused Deposition Modelling and Reprap technologies
Date of Delivery	November 2021
Authors	Filip Gorski, Filip Sarchinowski
Version	Final variant

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TOOLKIT 6 Rapid tooling

Project Title	Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period 2020-1-RO01-KA226-HE-495517
Output	IO2 - BRIGHT e-toolkit manual for digital learning in producing medical parts by 3D printing methods in the context of the pandemic
Toolkit	Toolkit 6 Rapid tooling
Date of Delivery	November 2021
Authors	Krzysztof Trzaskala
Version	Final variant

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Toolkit manual prepared by the consortium within IO2 ready to be published as “open book”



Results reached in the BRIGHT project (new books that were published)



BRIGHT project - Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period

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HOME PROJECT **RESULTS** WORK PACKAGES EVENTS PARTNERS CONTACT



RESULTS

INTELLECTUAL OUTPUT - IO2

BRIGHT e-toolkit manual for digital learning in producing medical parts by 3D printing methods in the context of the pandemic Output Type: Learning / teaching / training material – Toolkit Start ...



RESULTS

INTELLECTUAL OUTPUT - IO1

BRIGHT e-learning support courses for curriculum aiming to boost the scientific excellence and innovation of 3D printing methods used for developing and producing medical parts in pandemic period Output Type: Course ...

Search ...

SEARCH

RECENT POSTS

E2 – Multiplier Event – BRIGHT personalized teaching method for Higher education, 25th February 2022, Poznan, Poland

Monitoring Transnational Projects Meeting TPM 2 – 23-24 February 2022, Poznan, Poland

INTELLECTUAL OUTPUT – IO2

Quick overview of the Intellectual outputs related to the BRIGHT project

IO3 - BRIGHT e-learning virtual laboratory platform for boosting the scientific capacity and innovation in teaching processes related to medical parts made by 3D printing methods in pandemic period

(Assoc. prof. MSc. Eng. Peter Košťál, STU Bratislava)

Virtual laboratory with 4 rooms:

Starting:
1.12.2021

Open
access
on the
platform?

VR / AR methods?

Content

Report?

Deadline:
31.07.2022

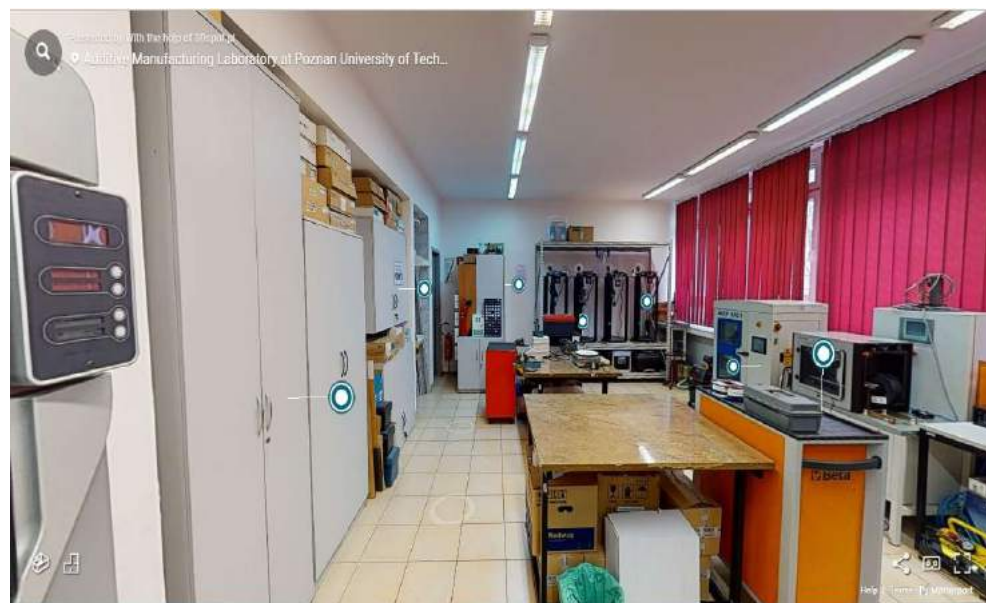
1 room for Virtual laboratory environment / including of Virtual reality elements in the platform	STU Bratislava / BIZZCOM s.r.o., SK
1 room for CAD / CAE programming - preparing the e-library with medical models	TUCN, RO & Univ of Juraj Dobrila, HR
1 room for 3D Printing Processes and Preparation	Univ. of Poznan, PL
1 room of Testing and control	University of Nis, SRB
The real printing of the prepared parts	B. M. Plast d.o.o.,HR & BIZZCOM s.r.o., SK
The testing procedures	all partners

For each room according to the skills and competences of the BRIGHT partners consortium, from the **Technical team** there will be **nominated 1-2 responsible persons** which will be in charge with the virtual room and will need to provide the informations for the virtual room of the virtual laboratory.

Quick overview of the Intellectual outputs related to the BRIGHT project

IO3 - BRIGHT e-learning virtual laboratory platform for boosting the scientific capacity and innovation in teaching processes related to medical parts made by 3D printing methods in pandemic period
(Assoc. prof. MSc. Eng. Peter Košťál, STU Bratislava)

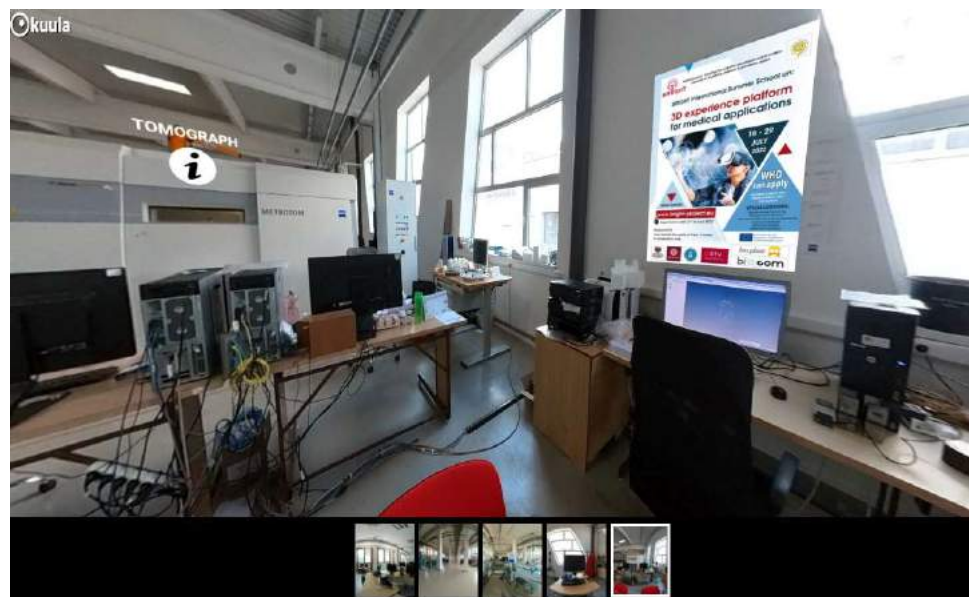
Virtual platform (in progress):



Quick overview of the Intellectual outputs related to the BRIGHT project

IO3 - BRIGHT e-learning virtual laboratory platform for boosting the scientific capacity and innovation in teaching processes related to medical parts made by 3D printing methods in pandemic period
(Assoc. prof. MSc. Eng. Peter Košťál, STU Bratislava)

Virtual platform (in progress):





BRIGHT project - Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period



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Boosting the scientific excellence and innovation capacity of
3D printing methods in pandemic period – BRIGHT
**Quick overview of activities held on BRIGHT summer
school 2022 edition organized in the city of Pula (Croatia)**

2020-1-RO01-KA226-HE-095517

Assoc. Prof.dr.eng. Razvan Pacurar

Department of Manufacturing Engineering,

Faculty of Industrial Engineering, Robotics & Production Management, TUCN, RO



Warm welcome at Mayor city institution





BRIGHT project - Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period



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Warm welcome at Mayor city institution





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Warm welcome at Mayor city institution



Warm welcome at Mayor city institution





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Warm welcome at Mayor city institution



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BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Opening ceremony



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Opening ceremony



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Opening ceremony



Special thanks to Ms. Tamara Kirsic and IDA for hosting the BRIGHT summer school 2022 edition

BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Opening ceremony



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Press release

Glas Istre

PULA ISTRRA CRNA KRONIKA HRVATSKA SVIJET SPORT KULTURA LIFESTYLE

PRETRAGA

BRIGHT - 3D

U Puli počela ljetna škola o korištenju novih tehnologija u biomedicini. Sudjeluje 60 studenata iz 10 zemalja, A DIO PREDAVANJA BIT ĆE NA FRATARSKOM OTOKU!

19.07.2022 16:39 | Autor: Doria MOHOROVIĆ



Najčitanije

1. PRVI DANI REDUKCIJE VODE U PULI: Vlasnik autopraonice prijeti tužbama i poručuje: "Prosječan restoran dnevno troši vode koliko i moja praonica. Oni smiju raditi, a ja ne"
2. Mladić došao u Max City na Stoji i nestao. JE LI GA NETKO VIDIO?
3. Pronađen mladić koji je u subotu nestao u Max Cityju u Puli, i to u kafiću
4. PERFORMANS GRADONAČELNIKA PULE NA UTAKMICI PROTIV HAJDUKA: Narugao se policiji, prekršio pravila Istre 1961 i ismijao njezine navijače

BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Socializing event – city tour visit



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Socializing event – city tour visit



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

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BRIGHT International Summer School – UNIPU – 18 - 29.07.2022



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BRIGHT International Summer School on:
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18 - 29 JULY 2022

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Registration until 15th of July 2022

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Logos: Technical University of Cluj-Napoca, University of Szeged, University of Debrecen, STU, bmplast, bizzcom

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2. CAE
3. 3D Printing of medical products
4. Testing of medical products
(3D scanning, mechanical testing)

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BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

CAD lecture



BRIGHT project - Boosting the scientific excellence and innovation
capacity of 3D printing methods in pandemic period



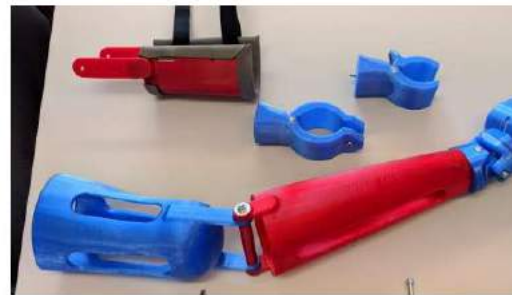
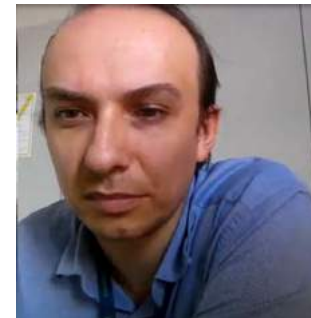
BRIGHT Summer School, Pula, Croatia, 18-29.07.2022

Computer Aided Design of 3D printed medical products

Filip GÓRSKI, PhD, DSc, BEng, Associate Professor
Poznan University of Technology,
Faculty of Mechanical Engineering

filip.gorski@put.poznan.pl filip.gorski.employee.put.poznan.pl

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CAD course held by Prof. Filip Gorski, Univ of Poznan, PL



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

CAD lecture



CAD course held by Prof. Filip Gorski, Univ of Poznan, PL

Launching of case studies and requirements

Case 1: bicycle prosthesis

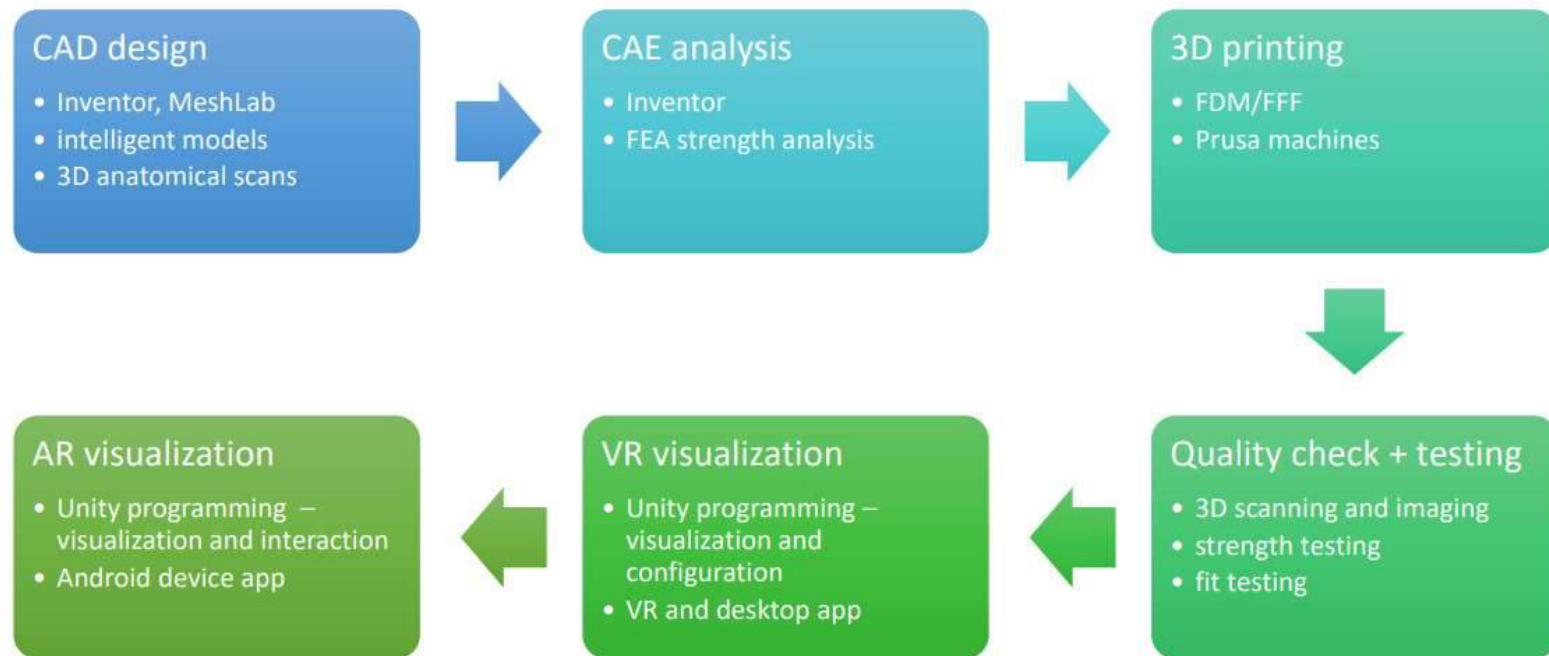


Case 2: hand orthosis

BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Launching of case studies and requirements

COURSE OF WORK WITH THE CASES



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

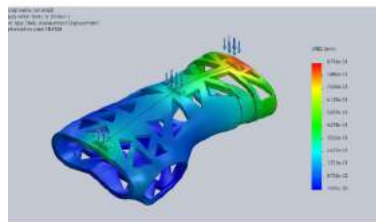
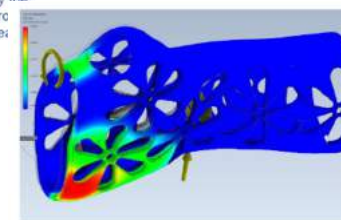
Ending of Polish day



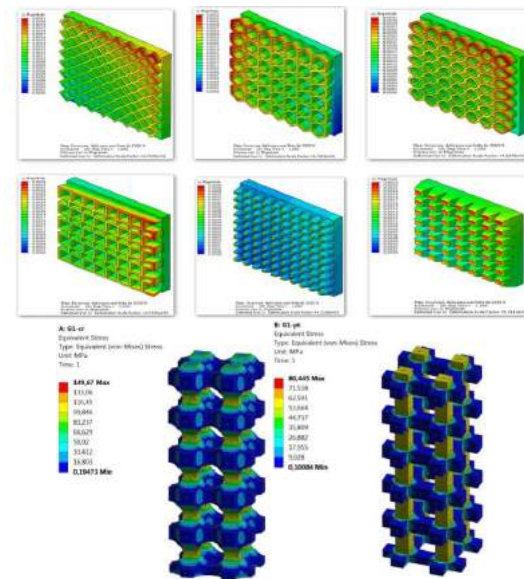
CAE lecture

Computer Aided Engineering for Medical Applications

Assoc. Prof.dr.eng. Razvan Pacurar
Department of Manufacturing Engineering,
Faculty of Industrial Engineering, Robotics & Production
Management, Technical University of Cluj-Napoca, Romania



1



CAE lecture held by Associate Prof. Razvan Pacurar, TUCN, RO

BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

CAE lecture



CAE lecture held by Associate Prof. Razvan Pacurar, TUCN, RO

BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

CAE lecture



CAE presentation held by Assistant Damjan Rangelov, Univ. of. Nis, SRB

3D printing lecture



BRIGHT project - Boosting the scientific excellence and innovation
capacity of 3D printing methods in pandemic period



3D Printing and Rapid Tooling Methods for Medical Applications

Assoc. Prof.dr.eng. Razvan Pacurar

Department of Manufacturing Engineering,
Faculty of Industrial Engineering, Robotics & Production
Management, Technical University of Cluj-Napoca, Romania



3D printing and Rapid Tooling course held by Associate Prof. Razvan Pacurar, TUCN, RO



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

3D printing lecture



3D printing and Rapid Tooling course held by Associate Prof. Razvan Pacurar, TUCN, RO

BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Ending of the Romanian day



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Ending of the Romanian day



Testing and 3D scanning



BRIGHT project - Boosting the scientific excellence and innovation
capacity of 3D printing methods in pandemic period

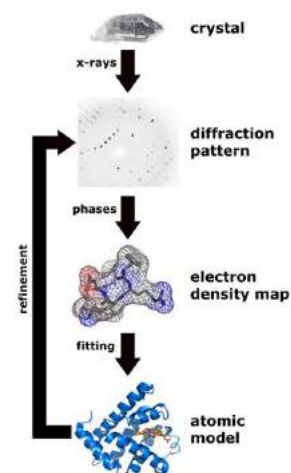


Materials Science and Strength of Materials in medicine

Remigiusz ŁABUDZKI, PhD Eng (remigiusz.labudzki@put.poznan.pl),

Faculty of Mechanical Engineering
POZNAN UNIVERSITY OF TECHNOLOGY
POLAND

This project has been funded with support from the European Commission. This publication (communication) reflects the views only of the authors, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



Materials Science and Strength of Materials course held by Prof. Remigiusz Labudzki, Univ of Poznan, PL



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Testing and 3D scanning



Materials Science and Strength of Materials course held by Prof. Remigiuzs Labudski, Univ of Poznan, PL

BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Testing and 3D scanning



Metrology course held by Prof. Ladislav Morovic, Univ. of Trnava, SK

BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Testing and 3D scanning



Measuring techniques presentation held by Assistant Rajko Turudija, Univ.of Nis, SRB

BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Testing and 3D scanning



3D scanning presentation held by Assistant Marko Peric, Univ.of Nis, SRB

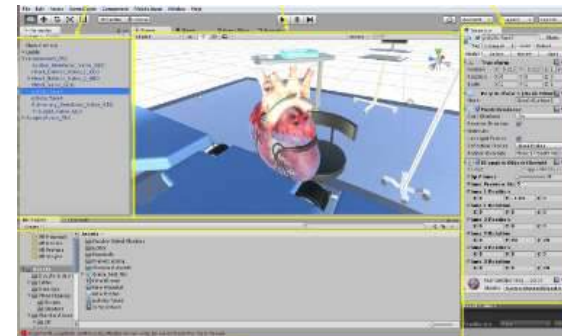
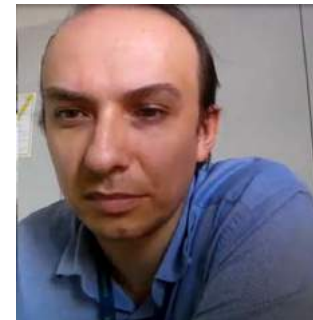
BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

VR lecture

VIRTUAL REALITY BUILDING VR APPLICATIONS



Filip GÓRSKI, DSc., PhD, BEng, Associate Prof.
filip.gorski@put.poznan.pl
Poznan University of Technology, Poland
Faculty of Mechanical Engineering



VR course held by Prof. Filip Gorski, Univ of Poznan, PL

BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

VR lecture



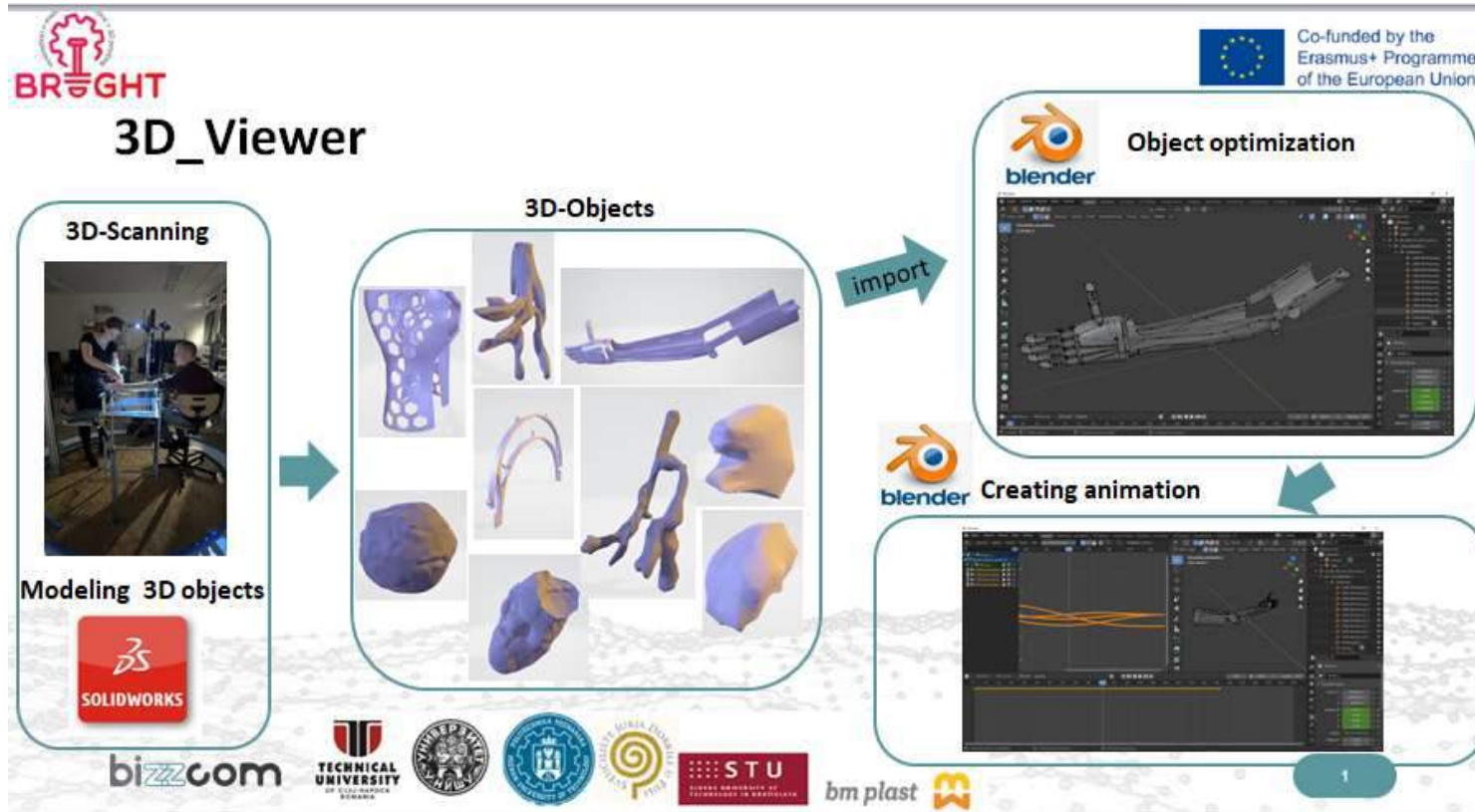
VR course held by Prof. Filip Gorski, Univ of Poznan, PL

BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

VR seminar



VR seminar held by Prof. Alin Plesa, TUCN, RO



AR course held by Martin Klonga, BIZZCOM, SK

BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

AR course



AR course held by Martin Klonga, BIZZCOM, SK

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B M Plast company visit



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B M Plast company visit



B M Plast company visit



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B M Plast company visit



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B M Plast company visit



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

B M Plast company visit



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Socializing activity – organized by B M Plast at the end of the 1st week in Opatija and Cres



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Socializing activity – organized by B M Plast at the end of the 1st week in Opatija and Cres



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Socializing activity – organized by B M Plast at the end of the 1st week in Opatija and Cres



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

METRIS institute visit



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

METRIS institute visit



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

METRIS institute visit



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

METRIS institute visit



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

METRIS institute visit



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

METRIS institute visit



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Medical hospital visit



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Medical hospital visit



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Medical hospital visit



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Medical hospital visit



Workshops with students on CAD / CAE



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Workshops with students on CAD / CAE



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Workshops with students on CAD / CAE



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Workshops with students on CAD / CAE



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Workshops with students on CAD / CAE



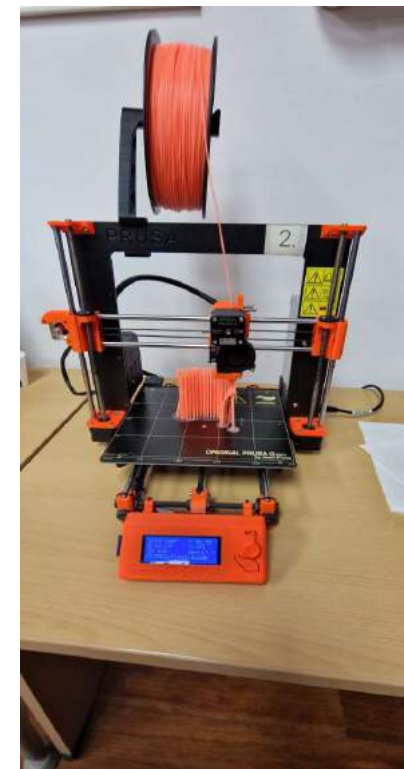
BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Ending of Serbian - Slovakian –Czech republic day



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Workshops with students on 3D printing



Workshops with students on 3D printing



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Workshops with students on 3D printing



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Workshops with students on VR / AR



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Nice feedbacks on behalf of BRIGHT professors regarding student progress report



Magdalena Zukowska from PUT Poznan in action

BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Presentations made by BRIGHT students



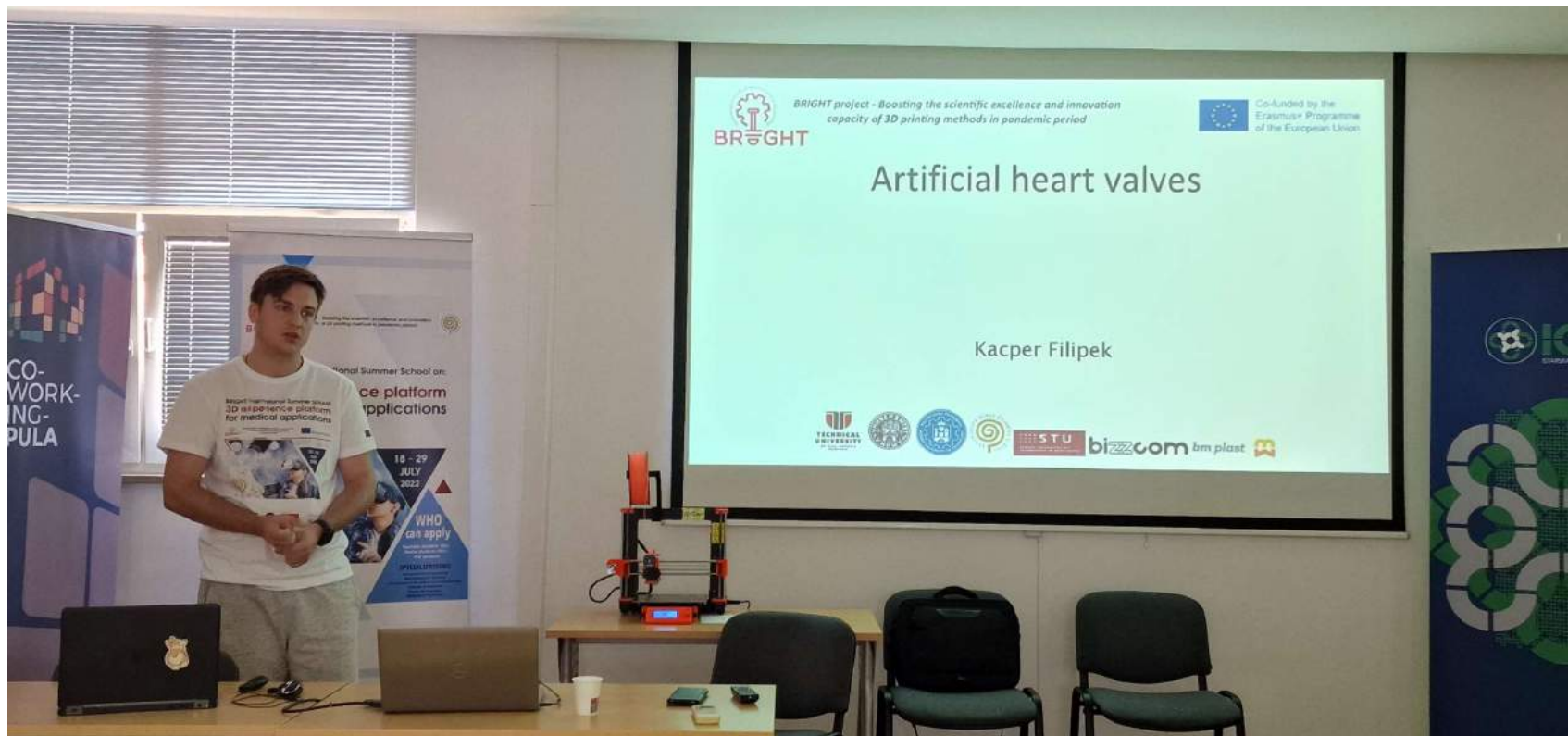
BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Presentations made by BRIGHT students



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Presentations made by BRIGHT students



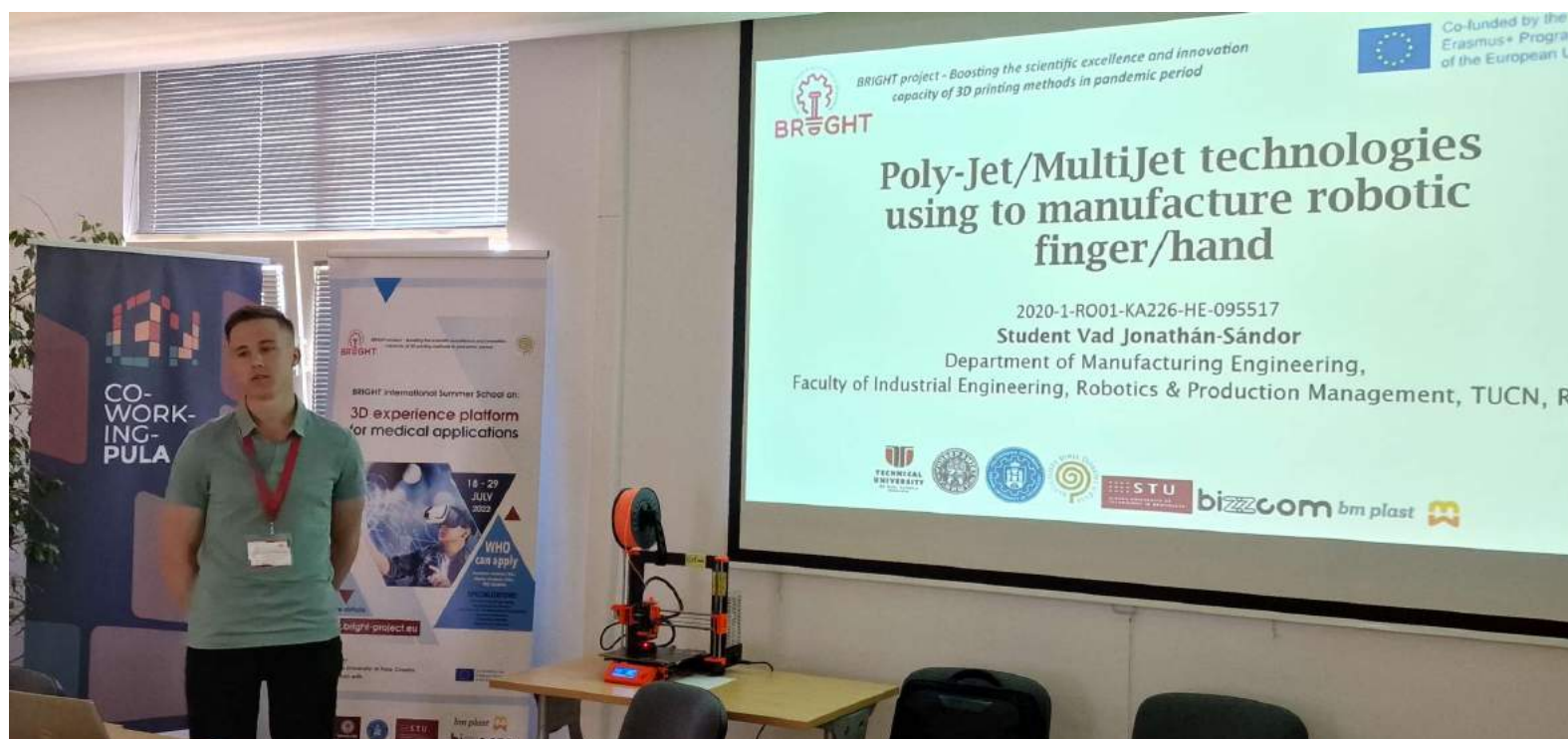
BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Presentations made by BRIGHT students



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Presentations made by BRIGHT students



Final tests delivered by the BRIGHT students



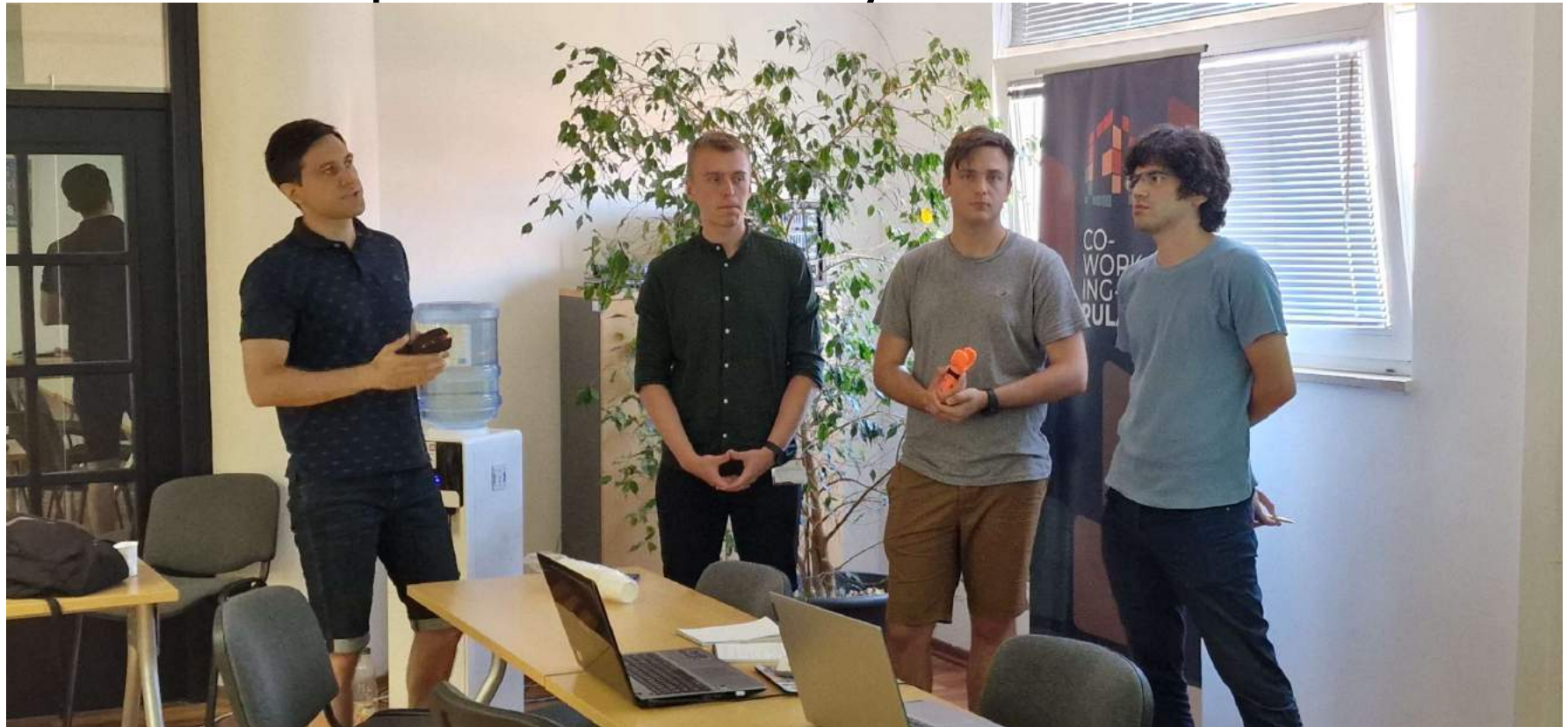
BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Final presentations delivered by the BRIGHT students



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Final presentations delivered by the BRIGHT students



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

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Final presentations delivered by the BRIGHT students



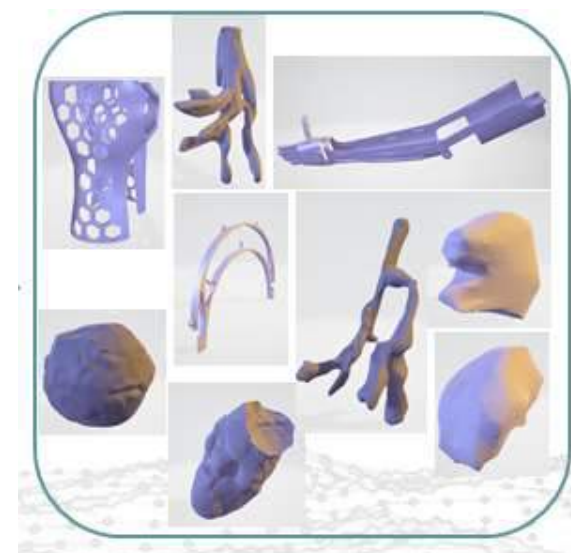
BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Final presentations delivered by the BRIGHT students



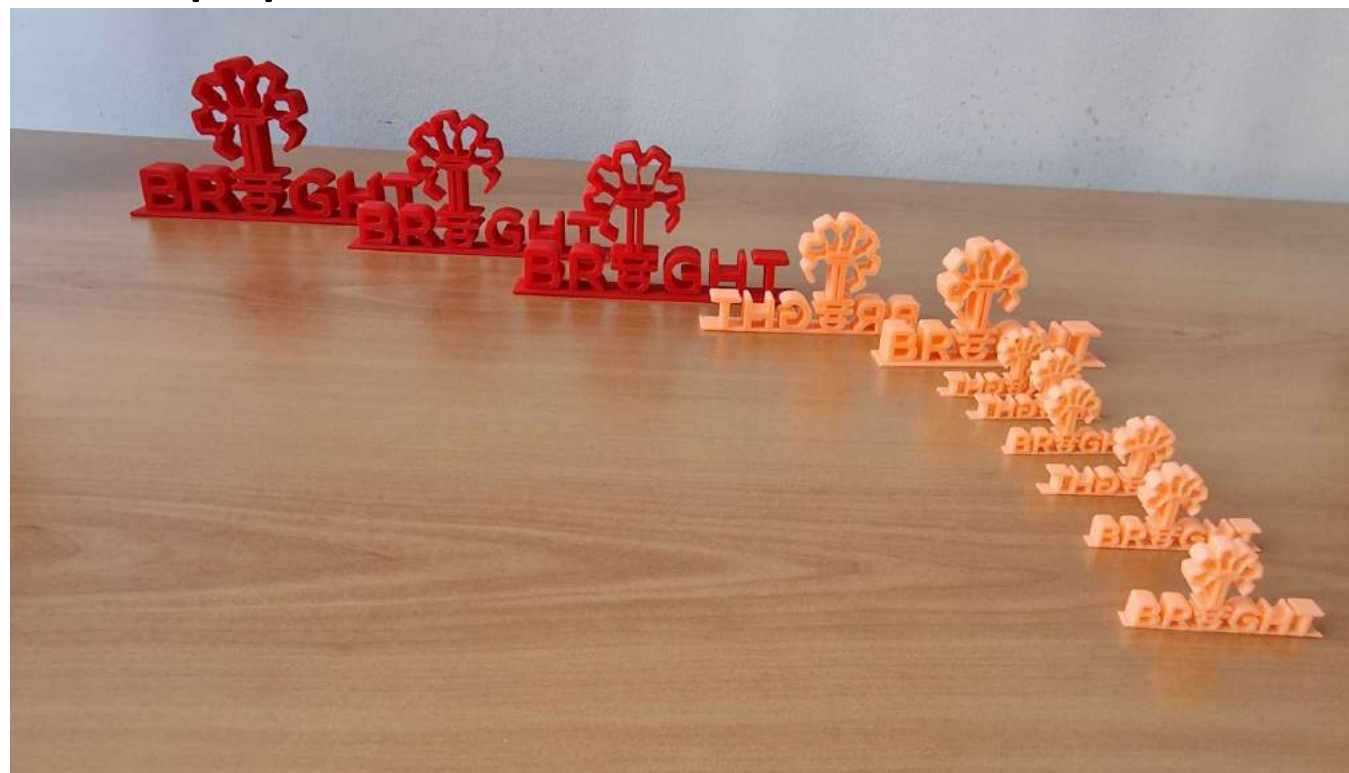
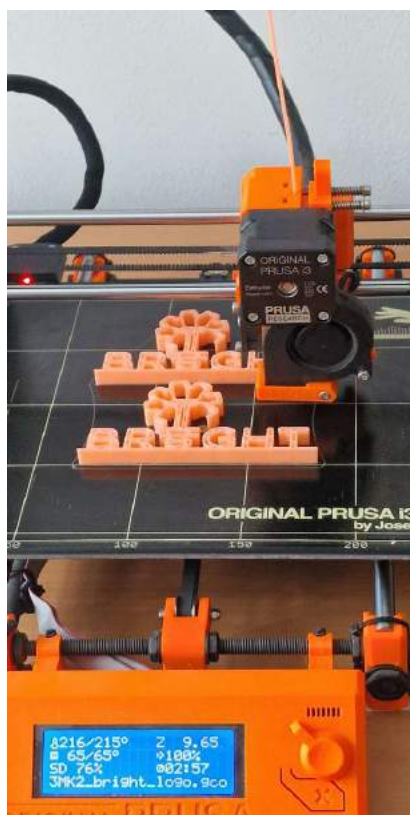
BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Final presentations delivered by the BRIGHT students



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Prizes prepared for the BRIGHT students



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Awarding ceremony of the BRIGHT students



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Awarding ceremony of the BRIGHT students



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Awarding ceremony of the BRIGHT students



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Awarding ceremony of the BRIGHT students



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Awarding ceremony of the BRIGHT students



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Quality time spent by the BRIGHT professors also



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022



Special thanks to Sven (Juraj Dobrila University) for being in charge /regarding BRIGHT summer school 2022 edition organizing

BRIGHT International Summer School – UNIPU – 18 - 29.07.2022



Special thanks to Red Cross for helping with the organizing of BRIGHT summer school 2022 edition (Fratarski Island)

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Awarding final ceremony of the BRIGHT students



BRIGHT International Summer School – UNIPU – 18 - 29.07.2022

Awarding final ceremony of the BRIGHT students





BRIGHT project - Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period



Co-funded by the
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of the European Union



Certificates with ERASMUS + label were offered to the BRIGHT International summer school participants at the end, **since the following conditions were fulfilled:**

1. the participants have attended to **minimum 75 %** of activities held at the BRIGHT Summer school (this includes lectures, presentations, labs, seminars, etc.);
2. the participants have defended **the final test and have delivered the final presentation;**
3. the participants have fulfilled **the final questionnaire.**



FOLLOW UP IN THE NEXT PERIOD

1. FINALIZING THE MAIN INTERFACE OF THE BRIGHT VIRTUAL LABORATORY PLATFORM



platform to be integrated on the BRIGHT project website / interface and links to be created

Good practice example on EuT+ on how the starting interface will look like (level zero)



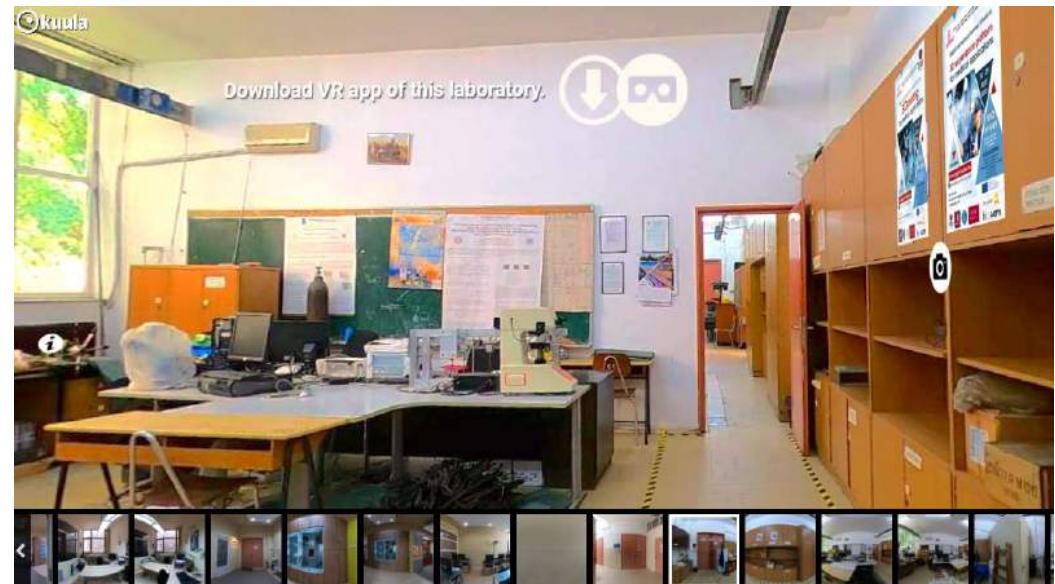
BRIGHT project - Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period



Co-funded by the
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FOLLOW UP IN THE NEXT PERIOD

2. FINALIZING OF 360 PHOTOS AND TAGGING OF EACH INSTITUTION OF THE BRIGHT PROJECT CONSORTIUM. THE BRIGHT VIRTUAL LABORATORY PLATFORM WILL CONTAIN PRESENTATION OF INSTITUTIONS, NOT PARTICULAR ROOMS





BRIGHT project - Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period

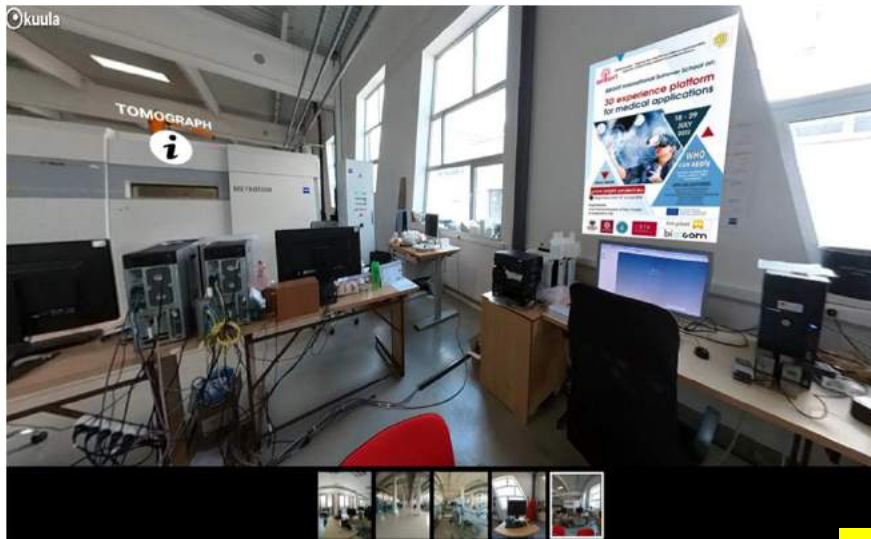


Co-funded by the
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FOLLOW UP IN THE NEXT PERIOD

IO3 - BRIGHT e-learning virtual laboratory platform for boosting the scientific capacity and innovation in teaching processes related to medical parts made by 3D printing methods in pandemic period

(Assoc. prof. MSc. Eng. Peter Košťál, STU Bratislava) – to be finalized until the end of September 2022



Virtual platform (is still in progress for the moment)

- Juraj Dobrila, B M Plast, Bizzcom – to be included in the platform with 360 photos / tagging / elements of VR / AR to be considered also





BRIGHT project - Boosting the scientific excellence and innovation capacity of 3D printing methods in pandemic period



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FOLLOW UP IN THE NEXT PERIOD

- 3. DEFENDING OF TIMESHEETS FOR IO3 AND RE-ADJUSTING OF BUDGET EXPENSES (by each partner in particular)**
- 4. PLANNING AND PARTICIPATING TO THE TRANSNATIONAL PROJECT MEETING & MULTIPLIER EVENT IN THE CITY OF PULA (CROATIA) IN THE PERIOD 27.09-01.10.2022**



5. PLANNING AND FINALIZING OF THE IO4 – leading partner – PUT Poznan (POLAND)

IO4 - BRIGHT e-learning webinars on the use of 3D printing technologies in development, testing and producing of medical parts in pandemic period (**Prof.dr.eng. Remigiusz Łabudzki, Technical Univ. of Poznan, Poland**)

4 webinars related to:

Open access on the platform?	1 webinar - CAD	TUCN, RO & Univ of <u>Juraj Dobrila</u> , HR
	1 webinar – CAE	TUCN, RO & Univ <u>Juraj Dobrila</u> , HR
Report?	1 webinar - the process of 3D printing	Univ. of Poznan, PL & B. M. <u>Plast d.o.o.</u> ,HR & BIZZCOM <u>s.r.o.</u> , SK
	1 webinar - post-processing/testing/standard procedures afterwards	University of Nis, SRB & STU Bratislava, SK TUCN, RO & Univ of <u>Juraj Dobrila</u> , HR

Starting:
1.05.2022

Scenarios?

Content?

Deadline:
30.11.2022

For each webinar according to the skills and competences of the BRIGHT partners consortium, from the Technical team there will be nominated 1-2 responsible persons which will be in charge with one webinar and will need to provide will need to provide the informations for the e-lerning webinar.

6. PLANNING AND FINALIZING OF THE IO5 – leading partner – Juraj Dobrila (Croatia) / disseminating plan to be conceived as the Agency is requiring so

IO5 - BRIGHT e-case studies for project based learning method used in developing, testing and manufacturing of new medical products by 3D printing technologies in pandemic period (Assoc. Prof. Sven Maricic, University of Juraj Dobrila, Croatia)

5 case studies from medical institutions

Open access on the platform?	CAD / CAE programs + Validation of the case studies	TUCN, RO & Univ Juraj Dobrila, HR	Starting: 1.09.2022
	3D printing process (students will be use the resources of e-virtual laboratory)	TUCN, RO & Univ Juraj Dobrila, HR & Univ. of Poznan, PL	BSc / MSc diploma theses?
	Real printing + Videos	B. M. Plast d.o.o., HR & BIZZCOM s.r.o., SK	Content?
Report?	Validation of products	University of Nis, SRB & STU Bratislava, SK	Deadline: 22.02.2023

5 academic / scientific publications are expected to be delivered (ISI – open access)

For each case study according to the skills and competences of the BRIGHT partners consortium, from the Technical team there will be nominated 1-2 responsible persons. 3 different teams comprising 5-7 students from different countries of the consortium will start to work on the topic. Validation of the solutions proposed by the students will be made with the help of their mentor (responsible professor of the BRIGHT consortium).

Results reached in the BRIGHT project (new articles that were published in 2021) – ISI with impact factor (Q1)



IMPACT
FACTOR
3.623

Covered in:
PubMed



Open Access Article

Thin Films Deposition of Ta₂O₅ and ZnO by E-Gun Technology on Co-Cr Alloy Manufactured by Direct Metal Laser Sintering

by Diana-Irinel Băltă 1,* , Cătălin Vițelaru 2 , Roxana Trușcă 1 , Lidia Ruxandra Constantie 2 , Ancuța Păcurar 3 , Constantina Anca Parau 2  and Răzvan Păcurar 3,* 

- 1 Department of Manufacturing Engineering, Faculty of Industrial Engineering and Robotics, Polytechnic University of Bucharest, Splaiul Independenței nr. 313, Sector 6, 060042 Bucharest, Romania
 - 2 National Institute for Research and Development in Optoelectronics, Atomistilor 409, 077125 Măgurele, Romania
 - 3 Department of Manufacturing Engineering, Faculty of Industrial Engineering, Robotics, Management and Production Management, Technical University of Cluj-Napoca, B-dul Muncii 103-105, 400641 Cluj-Napoca, Romania
- * Authors to whom correspondence should be addressed.

Academic Editors: Stanislav Legutko and Szymon Wojciechowski

Materials 2021, 14(13), 3665; <https://doi.org/10.3390/ma14133665>

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(This article belongs to the Special Issue Precision and Ultra-Precision Subtractive and Additive Manufacturing Processes of Alloys and Steels)

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Open Access Article

Selective Laser Melting of PA 2200 for Hip Implant Applications: Finite Element Analysis, Process Optimization, and Morphological and Mechanical Characterization

by Răzvan Păcurar 1,* , Petru Berce 1 , Anna Petriliu 1 , Ovidiu Nemeș 2 , Cristina Ștefana Miron Borzan 1 , Maria Hamidănova 3,4  and Ancuța Păcurar 1,* 

- 1 Department of Manufacturing Engineering, Faculty of Industrial Engineering, Robotics, Management and Production Management, Technical University of Cluj-Napoca, B-dul Muncii 103-105, 400641 Cluj-Napoca, Romania
 - 2 Department of Environmental Engineering and Sustainable Development Entrepreneurship, Faculty of Materials and Environmental Engineering, Technical University of Cluj-Napoca, B-dul Muncii 103-105, 400641 Cluj-Napoca, Romania
 - 3 Department of Electrical Engineering, Automation and Informatics, Faculty of Engineering, Slovak University of Agriculture in Nitra, Tr. A. Hlinku 2, 940 76 Nitra, Slovakia
 - 4 Department of Mechanical Engineering, Faculty of Technology, Institute of Technology and Business in České Budějovice, Okružní 10, 370 01 České Budějovice, Czech Republic
- * Authors to whom correspondence should be addressed.

Academic Editor: Joseph Sanderson

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Received: 29 April 2021 / Revised: 5 July 2021 / Accepted: 26 July 2021 / Published: 29 July 2021

(This article belongs to the Special Issue Advanced Laser Microfabrication)

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Open Access Article

Cast Iron Parts Obtained in Ceramic Molds Produced by Binder Jetting 3D Printing—Morphological and Mechanical Characterization

by Răzvan Păcurar 1,* , Petru Berce 1 , Ovidiu Nemeș 2,* , Diana-Irinel Băltă 3,* , Dan Serghiu Ștan 4 , Alexandru Gârcea 4 , Florin Popișter 5 , Cristina Miron Borzan 1 , Sven Maršić 6 , Stanislav Legutko 7 and Ancuța Păcurar 1

- 1 Department of Manufacturing Engineering, Faculty of Industrial Engineering, Robotics and Production Management, Technical University of Cluj-Napoca, B-dul Muncii 103-105, 400641 Cluj-Napoca, Romania
 - 2 Department of Environmental Engineering and Sustainable Development Entrepreneurship, Faculty of Materials and Environmental Engineering, Technical University of Cluj-Napoca, B-dul Muncii 103-105, 400641 Cluj-Napoca, Romania
 - 3 Department of Manufacturing Engineering, Faculty of Industrial Engineering and Robotics, Polytechnic University of Bucharest, Splaiul Independenței nr. 313, Sector 6, 060042 Bucharest, Romania
 - 4 Faculty of Automotive, Mechatronics and Mechanical Engineering, Technical University of Cluj-Napoca, B-dul Muncii 103-105, 400641 Cluj-Napoca, Romania
 - 5 Department of Design Engineering and Robotics, Faculty of Industrial Engineering, Robotics and Production Management, Technical University of Cluj-Napoca, B-dul Muncii 103-105, 400641 Cluj-Napoca, Romania
 - 6 Institute for Science and Technology VRSIO, Juraž Dobela University of Pula, 52100 Pula, Croatia
 - 7 Faculty of Mechanical Engineering, Poznań University of Technology, 60-965 Poznań, Poland
- * Authors to whom correspondence should be addressed.

Academic Editor: Antonino Raccò

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(This article belongs to the Special Issue Precision and Ultra-Precision Subtractive and Additive Manufacturing Processes of Alloys and Steels)

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Open Access Article

Mathematical Approach in Complex Surfaces Toolpaths

by Florin Popișter 1,* , Daniela Popescu 1 , Ancuța Păcurar 2  and Răzvan Păcurar 2,* 

- 1 Department of Design Engineering and Robotics, Faculty of Industrial Engineering, Robotics and Production Management, Technical University of Cluj-Napoca, B-dul Muncii 103-105, 400641 Cluj-Napoca, Romania
 - 2 Department of Manufacturing Engineering, Faculty of Industrial Engineering, Robotics and Production Management, Technical University of Cluj-Napoca, B-dul Muncii 103-105, 400641 Cluj-Napoca, Romania
- * Authors to whom correspondence should be addressed.

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Received: 28 April 2021 / Revised: 7 June 2021 / Accepted: 9 June 2021 / Published: 12 June 2021

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IMPACT
FACTOR
3.623

Covered in:
PubMed



IMPACT
FACTOR
2.258

CITESCORE
2.2
SCOPUS



Publications in ISI journals (Q1) – 4 publications in 2021



Results reached in the BRIGHT project (new articles that were published in 2022) – ISI



International Scientific-Technical Conference MANUFACTURING
→ MANUFACTURING 2022: **Advances in Manufacturing III** pp 59–68 | [Cite as](#)

Thin-Film Protective Coatings on Samples Manufactured by Direct Metal Laser Sintering Technology Used in Dentistry

Diana-Irinel Băilă , Răzvan Păcurar & Ancuța Păcurar

Conference paper | [First Online: 29 April 2022](#)

6 Accesses

Part of the [Lecture Notes in Mechanical Engineering](#) book series (LNME)

Abstract

In the last decade, additive manufacturing technologies and especially direct metal laser sintering (DMLS) had become a great sustainability development method which can be widely used in the industry for testing custom-designed materials to create highly complex geometry parts that cannot be made by conventional methods. Dental restorations are frequently made



International Scientific-Technical Conference MANUFACTURING
→ MANUFACTURING 2022: **Advances in Manufacturing III** pp 69–78 | [Cite as](#)

Sintered Compacts of Co-Cr Powders Doped with HAp and ZrO₂ Used in Implantology

Diana-Irinel Băilă , Răzvan Păcurar & Ancuța Păcurar

Conference paper | [First Online: 29 April 2022](#)

4 Accesses

Part of the [Lecture Notes in Mechanical Engineering](#) book series (LNME)

Abstract

Additive manufacturing (AM) methods are widely used in the industrial production, such processes being controlled by a computer, that permit to create three-dimensional object by depositing materials, usually in layers. The objective of this article was to realize sintered compacts of Co-Cr powder doped with ZrO₂ and with HAp, necessary to improve the bioactivity for the medical implants. For this study, the samples were immersed in simulated biological fluid (SBF) for 21 days. The samples were doped with different percentage of HAp,



International Scientific-Technical Conference MANUFACTURING
→ MANUFACTURING 2022: **Advances in Manufacturing III** pp 79–92 | [Cite as](#)

Contact Surface Model Parameterization of the Extra-Articular Distal Humerus Plate

Nikola Viteković , Miroslav Trajanović, Jovan Arandelović, Răzvan Păcurar & Cristina Borzan

Conference paper | [First Online: 29 April 2022](#)

6 Accesses

Part of the [Lecture Notes in Mechanical Engineering](#) book series (LNME)

Abstract

In orthopedic surgery, it is vital to use proper fixation techniques to treat various medical conditions. Distal humerus fractures include high energy trauma with ruptured skin and low energy trauma in osteoporotic bone. Surgical treatment of extra-articular distal humerus fractures using open reduction and internal fixation with plate implants improves patient recovery and decreases soft tissue complications. Nowadays, two types of plates and their variants are commonly used for bone fixation: Dynamic Compression Plates - DCP and Locking



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Co-funded by the
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7. Checking for sustainable solutions for the next editions of BRIGHT International summer school events to be organized (new ERASMUS + project proposals, new ERASMUS agreements, CEEPUS actions)





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EUROPEAN TECHNOLOGY STUDENTS RESEARCH EXPERIENCE IN PROGRESS NEWS

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TECHNOLOGY
"Think human first"



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The Alliance





WHAT OUR AGREEMENTS SHOULD LOOK LIKE

Town	Institution	Number of person				To UTT		To h_da		To RTU		To TU DUBLIN		To TUS		To CUT		To UPCT		To UTCN		Total OUT	
		Students	Target 2021	Staff	Target 2021	Students	Staff	Students	Staff	Students	Staff	Students	Staff	Students	Staff	Students	Staff	Students	Staff	Students	Staff	Students	Staff
From	UTT	3500	10%	400	10%			61	3	50	7	102	12	32	10	11	1	20	4	74	2	350	40
From	h_da	17000	10%	1000	10%	71	4			283	19	575	31	182	27	63	3	111	10	416	6	1700	100
From	RTU	14000	10%	2112	10%	56	8	273	21			458	74	144	63	50	8	88	23	331	14	1400	211
From	TU DUBLIN	28500	10%	3500	10%	137	16	666	40	549	85			353	122	122	15	216	43	808	28	2850	350
From	TUS	9000	10%	3003	10%	34	13	166	33	137	69	278	115			30	12	54	35	201	22	900	300
From	CUT	3100	10%	380	10%	11	1	54	3	44	7	90	11	28	10			17	3	65	2	310	38
From	UPCT	5500	10%	1072	10%	20	4	98	10	80	20	164	34	52	29	18	4			118	7	550	107
From	UTCN	20600	10%	680	10%	89	2	434	6	358	13	728	21	230	18	79	2	141	6			2060	68
TOTAL IN						To UTT		To h_da		To RTU		To TUD		To TUS		To CUT		To UPCT		To UTCN		Mobility Total	
						419	49	1752	117	1501	221	2396	298	1021	278	372	46	646	124	2013	81	10120	1215
						Students	Staff	Students	Staff	Students	Staff	Students	Staff	Students	Staff	Students	Staff	Students	Staff	Students	Staff	Students	Staff



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Training activities / workshops / seminars to be considered in the future at the level of BRIGHT consortium





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CONFERENCE COMMITTEES CALL FOR PAPERS PROGRAM REGISTRATION PUBLICATION VENUE CONTACT



MPER Management and Production Engineering Review
MPER: Management and Production Engineering Review (PL: 70 points)
ISSN 2092-1344



BULLETIN OF THE POLISH ACADEMY OF SCIENCES
BRIGHT: Bulletin of the Polish Academy of Sciences, Technical Sciences, Special Issue: Sustainability on Production in the aspect of Industry 4.0 (April: 1, 600 PL: 700 points)
ISSN 2300-1917



MPEM: Materials, Special Issue: 3D Printing in Medicine and Biomedical Engineering (April: 3,102 PL: 142 points)
MPEM: Materials, Special Issue: Analytical and Mechanical Engineering (April: 3,102 PL: 142)



ASPM: Applied Sciences, Special Issue: Smart Manufacturing Systems in Industry 4.0 (April: 2,736 PL: 70 points)

Conferences to be organized





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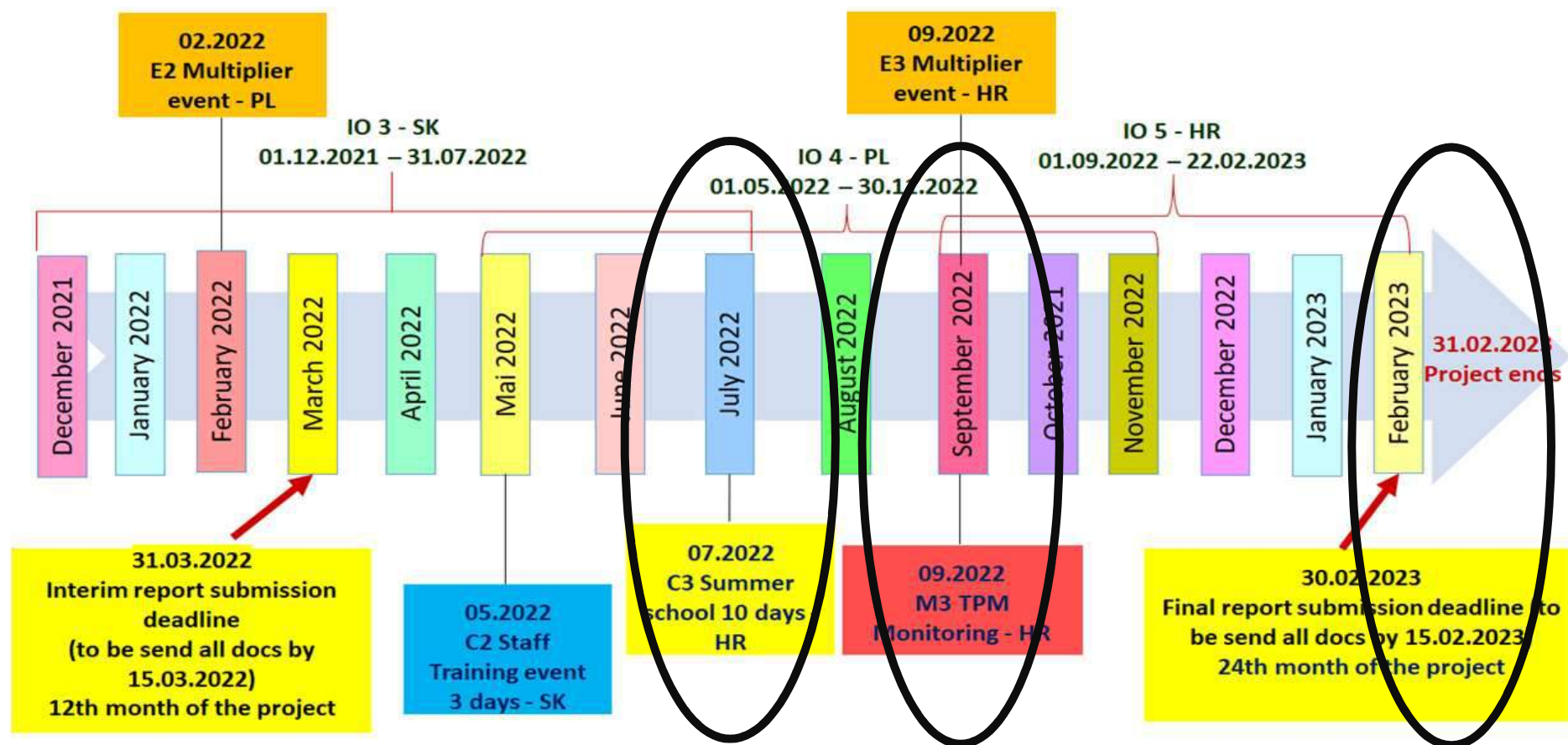
WE
ARE
BRIGHT



Building and sustaining in between us like a BRIGHT team



Quick overview of the activities planned to be organized within the BRIGHT project





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BRIGHT project consortium



Assoc.prof.dr.eng.
Razvan Pacurar,
TUCN, RO



Prof.dr.eng.
Milos Simonovic,
University of Nis, SRB



Prof.dr.eng. Remigiuksz Labudski,
Univ. of Poznan, PL



Prof.dr.eng. Peter Kostal,
STU, Bratislava, SK



Prof.dr.eng. Sven Maricic,
Juraj Dobrila University, Istria, HR



Branislav Rabara, BIZZCOM s.r.o., Bučany, SK



Mate & Senka Babic, B. M. Plast d.o.o, Optaija, HR





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BRIGHT International Summer School on: 3D experience platform for medical applications



**18 - 29
JULY
2022**

More details

**WHO
can apply**

Bachelor students (BSc)
Master students (MSc)
PhD students

SPECIALIZATIONS:

Manufacturing Engineering:
Mechatronics & Robotics
Mechanical & Bio-Mechanical Engineering
Science of Materials
Physics & Chemistry
Medicine & Pharmacy

www.bright-project.eu

Registration until 15th of July 2022

Organized by
Juraj Dobrila University of Pula, Croatia
In cooperation with

 Co-funded by the
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the European Union









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Special thanks to all who registered and attended the BRIGHT International Summer School 2022 edition





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BRIGHT International Summer School – Follow up / contact



Bright Erasmus+ Project
@bright3Dprinting · Educație



email addresses:

BRIGHT project: erasmus.bright2020@gmail.com

Assoc. Prof.dr.eng. Razvan Pacurar – razvan.pacurar@tcm.utcluj.ro

Facebook, Instagram:

<https://www.facebook.com/bright3Dprinting>

BRIGHT webpage:

<https://bright-project.eu/>

