CORPORATIVE INFORMATION		
Name of the company	**AIT Austrian Institute of Technology GmbH**	
Contact Person	**Nicole Brosch**	Email:
Location	Country	Austria
	City	Vienna
	Address	Giefinggasse 4, 1210 Vienna, Austria
Sector	**Research and Technology Organization (RTO), industrial research**	

PROPOSED INTERNHISP INFORMATION		
Number of trainees to host (in case you want more than 1 trainee, indicate the different departments where they will work)	1	
Extension time (extra months and salary) OPTIONAL SEE DOCUMENT: *"FORM 2_Global Training 2022 extension preliminary agreement"*	**Extra months**	Si al finalizar los 6 primeros meses la empresa y el becario desean prorrogar la estancia, la empresa ofrece la posibilidad de prorrogar la estancia hasta 6 meses más.
	Monthly payment for extra months (between 0-1500€/month)	Al finalizar los 6 primeros meses, la empresa ofrece la posibilidad de prorrogar la estancia varios meses con la siguiente mensualidad (a día de hoy): Payment similar to previous payment through Basque Government

INTERNSHIP/PLACEMENT INFORMATION	
Department	Center for Vision, Automation & Control (VAC): https://www.ait.ac.at/en/about-the-ait/center/center-for-vision-automation-control Competence unit High-Performance Vision Systems (HVS): https://www.ait.ac.at/en/research-topics/high-performance-vision-systems
Description of project/activities	*3D quality inspection of blood pumps with micro-structured functional surfaces.* To improve the survival and quality of life for heart failure patients, novel ceramic heart pumps are manufactured by our project partners, with customised microscopic surface structures, to achieve ideal flow conditions. The proposed project is embedded in a cooperative research & development programme on optimised hydrodynamic flow behaviour by surface functionalisation of ceramic 3D printed blood pumps, bringing together academic and industrial partners in additive manufacturing, microfluidics and computational fluid dynamics, functional surfaces and nanostructures, high-performance vision & quality inspection as well as *in vitro* testing of blood pumps, tissue and cell cultures and microscopic imaging. For the proposed project at the AIT Austrian Institute of Technology, the trainee will inspect the 3D geometry and the added surface microstructures using existing vision systems at our premises and contribute to the development of 3D image reconstruction algorithms and routines to quantitatively evaluate the image data. More specifically, the trainee will work with inline computational imaging and focus stacking system and their respective 3D reconstruction algorithms. They will be supervised by research scientists and engineers, with expert knowledge in this field.
COMPETENCES, SKILLS and EXPERIENCE REQUIREMENTS	
Requested profile(s) information (Studies, previous experience, language skills, other skills…)	- Degree in Computer Science, Computer Vision / Image Processing, Mathematics, Physics, or related fields - Knowledge in computer vision and image processing - Good programming skills in Python and/or Matlab - Ability to communicate and work in a team

	• Strong self-motivation and enthusiasm for creative solutions • Very good command of English in spoken and written
Other commentaries	

APPLICATION FORM 1 APPLICATION FORM: GLOBAL TRAINING PROGRAMME

EMPRESA/ORGANISMO	FIRMA	FECHA
AIT Austrian Institute of Technology GmbH Andreas Vrabl (Head of Center) Center for Vision, Automation & Control, AIT Markus Clabian (Head of Competence Unit) Competence unit High-Performance Vision Systems, AIT	ppa. Signatory: Andreas Robert Vrabl Date: 04.04.2022 16:25:51 This document bearing a qualified electronic signature has the same legal standing as a handwritten document in accordance with Article 25 (2) of Regulation (EU) No. 910/2014 of 23 July 2014 ("eIDAS-VO") **This document is digitally signed!** Validation: Information on checking the electronic signature can be found at: www.handy-signatur.at www.handy-signatur.at A-TRUST einfach sicher i.A. Signiert von: Markus Heinz Franz Clabian Datum: 04.04.2022 11:10:25 Dieses mit einer qualifizierten elektronischen Signatur versehene Dokument hat gemäß Art. 25 Abs. 2 der Verordnung (EU) Nr 910/2014 vom 23. Juli 2014 ("eIDAS-VO") die gleiche Rechtswirkung wie ein handschriftlich unterschriebenes Dokument. **Dieses Dokument ist digital signiert!** Prüfinformation: Informationen zur Prüfung der elektronischen Signatur finden Sie unter: www.handy-signatur.at www.a-trust.at A-TRUST einfach sicher	24-March 2022

INFORMATION ABOUT THE COMPANY/INSTITUTION

LOGO	
WEBSITE	https://www.ait.ac.at/
INFORMATION ABOUT THE CITY AND THE AREA WHERE THE COMPANY/ISTITUTION IS LOCATED (General information about SECURITY, ACCOMODATION, PUBLIC TRANSPORT…)	Vienna, Austria's capital, is a city with a very high quality of life, a feature that is highly appreciated by the many visitors who come to the Austrian capital. Vienna features an excellent infrastructure, is clean, safe, and dependent where in Vienna you stay quite green. Vienna's comprehensive and unified public-transport network is one of the most efficient in Europe. Flat-fare tickets are valid for trains, trams, buses, the underground (U-Bahn) and the S-Bahn regional trains. Services are frequent and you rarely have to wait more than 10 minutes. AIT-VAC-HVS is located more in the outskirts of Vienna, however, it can be easily reached by means of public transport (approx. 20 min from the main station).
GENERAL INFORMATION ABOUT THE COMPANY/INSTITUTION	We are Austria's largest Research and Technology Organization (RTO) and an international key player in many of the research areas we cover. This makes us a leading development partner for the industry and a top employer within the international scientific community. AIT provides research and technological development to realise basic innovations for the next generation of infrastructure related technologies in the fields of Energy, Mobility Systems, Low-Emission Transport, Health & Bioresources, Digital Safety & Security, Vision, Automation & Control and Technology Experience. As a national and international network node at the interface of science and industry AIT enables innovation through its scientific-technological expertise, market experience, tight customer relationships and high-quality research infrastructure. The *Center Vision, Automation & Control (VAC)* is a team of about 100 experts in various fields including image processing, machine learning, sensor fusion, data analytics, etc. The Competence Unit *High-Performance Vision Systems (HVS)* in VAC has been active in research for industrial inspection and quality assurance systems for many partners in industries from print inspection to surface inspection tasks for more than 20 years.
SIZE OF THE COMPANY (EMPLOYEES)	The AIT has about 1.400 employees - mostly based at the main facilities Vienna Giefinggasse, Seibersdorf, Wiener Neustadt, Ranshofen, and Graz.
NUMBER OF PEOPLE AT THE DEPARTMENT WHERE THE TRAINEESHIP WILL TAKE PLAKE	Competence Unit High-Performance Vision Systems (HVS): approximately 35
MAIN ACTIVITY OF THE COMPANY/INSTITUTION	The competence unit High-Performance Vision Systems has been active in research for industrial inspection and quality assurance systems in different domains: • High-speed acquisition concepts (high-speed cameras, illumination, …) • Inline computational imaging methods (image processing, 3D reconstruction, …) • Real-time vision for robotic systems • Advance machine learning tools and AI-based inspection

A BRIEF EXPLANATION OF MAIN PROJECTS	The competence unit High-Performance Vision Systems (HVS) in the Center for Vision, Automation & Control has a focus on industrial inspection and quality assurance. One of our main research topics focuses on computational imaging, a fast-growing new research field combining new image acquisition technologies with intelligent algorithms. The aim is to extract image information which could not be derived by conventional machine vision. Light field and photometric stereo are two prominent examples for computational imaging. A light field consists of multiple views of an object obtained from different viewing angles. It can be understood as an extension of conventional stereo systems, i.e., as multi-view stereo. This technology uses more than two object views in combination with advanced algorithms and therefore allows for more accurate and robust calculation of depth information. By high-performance computational processing of the light-field data one can derive depth information and obtain all-in-focus images with increased image quality. In the proposed project, the trainee will exploit computational imaging to inspect and characterise quantitatively the 3D geometry and the added surface microstructures of the printed ceramic blood pumps.
PREVIOUS COLLABORATION IN INTERNSHIP/TRAINING PROGRAMMES?	Master students through IAESTE
OTHER COMMENTARIES	