Universidad Euskal Herriko
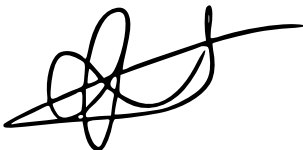del País Vasco Unibertsitatea

GLOBAL TRAINING PROGRAMME

FORM 1 APPLICATION FORM: GLOBAL TRAINING PROGRAMME

REFERENCIA: EHU30

CORPORATIVE INFORMATION		
Name of the company	**Multiverse Computing**	
Contact Person	**Razvan Macec**	**Email:**
Location Country	France	
City	Paris	
Address	WIPSE Paris-Saclay Enterprises 7, rue de la Croix Martre 91120 Palaiseau	
Sector	**Computer programming and software**	

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** **(2 INTERNSHIP PROJECST: WTech - Services and Tech - Product)**	
Extension time (extra months and salary) OPTIONAL SEE DOCUMENT: "FORM 2_Global Training 2023 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 2 meses más con la siguiente mensualidad:1600€/month
	Monthly payment for extra months (between 0-1600€/month)	

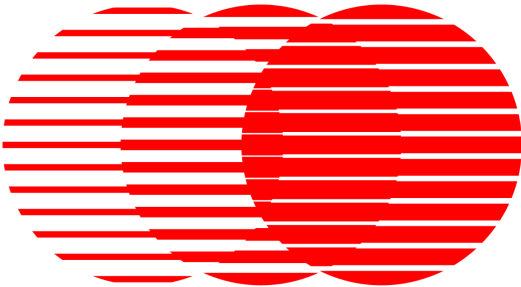| INTERNSHIP/PLACEMENT INFORMATION	
Department	Tech - Services and Tech- Product

Description of project/activities	Goals of the internship for the Tech-Services Department (Profile 1 Machine Learning Engineer):
	- Collaborate with quantum experts to design and implement new machine learning models.
	- Collaborate in developing exploratory research work at the intersection of Graph Neural Networks and Quantum Computing.
	- Collaborate in the exploration of the performance of different classes of GNNs and Quantum Computing methods to predict the properties of novel molecules. This includes collaboration with:
	  - Investigating the performance of GNNs, GCNs (e.g. ProteinGCN, DeepFRI) and GATs (e.g. ParatopePrediction) for this task and preparing classical benchmarks.
	  - Investigating the performance of quantum optimization techniques (e.g. quantum annealing on D-Wave) for this task.
	  - Exploring the complementary of GNNs, GCNs, GATs and quantum optimization techniques for this task.
	
	Goals of the internship for the Tech-Product Department (Profile 2 Quantum Software Engineer) :
	- Collaborate with the founding team in a fast paced startup environment.
	- Contribute to designing and improving Multiverse's codebase.
	- Design and implement new quantum algorithms. This include collaboration with:

	- The Implementation and investigation of methods from the literature for pricing options contracts on a quantum computer. - Exploration of novel methods such as quantum basis regression and quantum neural networks for pricing options. - Investigation of the applications of mathematical frameworks from quantum physics applied to the portfolio optimisation problem.
COMPETENCES, SKILLS and EXPERIENCE REQUIREMENTS	
Requested profile(s) information (Studies, previous experience, language skills, other skills…)	Profile 1 Machine Learning Engineer (Tech-Services department): - Masters degree in Computer Science, Statistics, Operations Research, or related field. - Background in machine learning, both theoretical and practical. - Knowledge of Python, Scikit, and TensorFlow. - Experience using git, unit testing, and docker. - Ability to work with a diverse team of people, both in-person and through online resources. - Perfect command of the English language. Profile 2 Quantum Software Engineer (Tech-Product department): - Masters degree in Quantum Physics, Quantum Engineering, or related field. - Knowledge of quantum computing algorithms, particularly gate model and hybrid techniques. - Knowledge of Python and related scientific computing tools. - Experience with quantum computing SDKs (Qiskit, Pennylane, or others). - Ability to work with a diverse team of people, both in-person and through online resources. - Perfect command of English language
Other commentaries	Knowledge of quantum physics / quantum computing is valuable.

COMPANY/INSTITUTION	SIGNATURE	DATE
REPRESENTATIVE : **Román Óscar Orús Lacort**		03/05/2023

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INFORMATION ABOUT THE COMPANY/INSTITUTION

LOGO	**MULTIVERSE COMPUTING**
WEBSITE	https://multiversecomputing.com/
INFORMATION ABOUT THE CITY AND THE AREA WHERE THE COMPANY/INSTITUTION IS LOCATED (General information about SECURITY, ACCOMODATION, PUBLIC TRANSPORT…)	The office is located in WIPSE Paris-Saclay Enterprises 7, rue de la Croix Martre 91120 Palaiseau As for transportation, we recommend using Passe Navigo. Passe Navigo is the travel card used by the inhabitants of Paris and the cheapest way of getting around Paris. Travellers can either purchase a weekly pass or a monthly pass. Please find more information here. Please find a general vision about the public transportation tickets here. Paris toolkit is a good source of information on all related topics (https://www.paristoolkit.com/).
GENERAL INFORMATION ABOUT THE COMPANY/INSTITUTION	Multiverse is a well-funded deep-tech company. We are one of the few companies working with Quantum Computing. We provide hyper-efficient software to companies wanting to gain an edge with quantum computing and artificial intelligence. We work in finance, energy, manufacturing, cybersecurity and many more industries. You will be working alongside world leading experts to build solutions that tackle real life issues. We are proud to grow in an ethics driven environment, promoting sustainability and diversity.
SIZE OF THE COMPANY (EMPLOYEES)	80

BasqueTrade & Investment
Agencia Vasca de Internacionalización
Nazioartekotzeko Euskal Agentzia

GRUPO SPRI TALDEA

EUSKO JAURLARITZA GOBIERNO VASCO
BASQUE GOVERNMENT

NUMBER OF PEOPLE AT THE DEPARTMENT WHERE THE TRAINEESHIP WILL TAKE PLAKE	7
MAIN ACTIVITY OF THE COMPANY/INSTITUTION	The provision of all kinds of computer services, especially the development of quantum computing applications.
A BRIEF EXPLANATION OF MAIN PROJECTS	The company's main product is Singularity. It is a software as a service platform that contains quantum and quantum-inspired algorithms developed and patented through proof-of-concept trials we have been performing for industrial and service clients. While Singularity owes its performance to advanced quantum techniques, its interface is intuitive and requires no specialised quantum computing knowledge. It is Quantum for the masses with an ease of use: it gets the data from the customer to pre-process it and determine the best algorithm and quantum computer to use, sends the data to the quantum computer to deploy our patented algorithms and manages the queues to retrieve the results and send them back to the customer. Verticals in finance, energy, manufacturing, mobility, health and life sciences, engineering, aerospace, cybersecurity, defence, chemistry.
PREVIOUS COLLABORATION IN INTERNSHIP/TRAINING PROGRAMMES?	No.
OTHER COMMENTARIES	