
Field Project Atelier 2022

Introduction

This Booklet describes the list of field project positions available at the companies participating to the Field Project Atelier (SA5) during Fall semester 2022. The Field Project Atelier consists of an experience in collaboration with a company. The goal is for the students to obtain hands-on experience with real world problems. The Field Project Atelier can be done individually or as a group, depending on the given context.

Since 2014 the Faculty of Informatics collaborated in this context with 38 companies offering field projects to 161 students. This year we have 19 companies on board.

People responsible

ing. Mauro Prevostini

Schedule

The Field Project Atelier will take place **from September 22 to December 16, 2022**, at the company during Thursdays and Fridays the whole day. Important dates to be scheduled are as follows:

- **September 22: Kick-off meeting** at USI
- **September 23: Beginning** of the field project at the company
- **October 26:** Update meeting **students-professor** at USI
- **Novembre 30:** Update meeting **students-professor** at USI
- **December 16: Closing session** at USI

Duties

You are given time until **May 1st** to express your preferences ranked as 1, 2, 3, 4 by means of the following form:

<https://forms.gle/eQUPLDTcKprxb8f8>

Should you not do so, you will be assigned to a field project place.

Due to the pandemic situation COVID-19, it might be that changes in the «Mode of work (in presence, remotely, hybrid)» could change during Fall 2022 depending on the company internal policies.

Contract

Enclosed, for your information, you find an **example** of the collaboration contract that the student, the company and USI will have to sign.

Permit


In case you have a B student permit, for the Field project it must be renewed as a student without activity as it is a curricular internship.

In case the company will give you a salary, then you have to extend the permit with activity.

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4BMC Sagl

	
Website	https://4bmc.ch
Contact	Saverio Salaris, saverio@4bmc.ch
Number of positions available	2
Company address	Via Luganetto 4, 6962 Viganello
Mode of work (in presence, remotely, hybrid)	In presence

Company Description

4BMC is a Solutions Agency whose vocation is to help SMEs to enhance their offer through the use of the most advanced technologies, in particular Blockchain technology: with this in mind, it deals with the development of solutions for food traceability, certification and intellectual property protection. 4BMC also offers assistance in fundraising, implementation and launch of blockchain solutions, such as smart contracts, D-App, NFT, cryptocurrencies and virtual wallets.

PROJECT 1

Project Title

QualityChain Page Creation Wizard

Project Description

4BMC has developed and marketed QualityChain (<https://qualitychain.ch>), a product aimed at agri-food producers that allows you to create product storytelling pages, linked to the physical product via QR Code, which include details about the company, methods of production, traceability information and other information relevant to consumers. This information is recorded on a public blockchain through a specific smart contract.

Currently, the pages are created through a dashboard for internal use created with the admin interface of the Django framework. The project will consist in the development of a wizard with an intuitive customer-facing interface, created with Vue.js, which allows the manufacturer to independently create its product pages. The interface will consist of a series of dynamic forms, with loading of texts, images, videos and other multimedia materials. The wizard will have to include a real-time preview of the product pages, so that the user can immediately realize the visual effect of his changes on the page.

The information entered through the interface must be sent to the Django backend of the platform, in order to be saved on the database.

Technologies to be used

Python, Django, Vue.js, HTML, CSS, Javascript, Rest API, postgres

PROJECT 2

Project Title

Custom QR Code Generator

Project Description

4BMC has developed and marketed QualityChain (<https://qualitychain.ch>), a product aimed at agri-food producers that allows you to create product storytelling pages, linked to the physical product via QR Code, which include details about the company, methods of production, traceability information and other information relevant to consumers.

We would like to integrate a QR Code creation wizard customized with shapes and colors to the platform (look at the site to see some examples). Currently the QR Codes are generated through an external online service and manually inserted into Adobe Indesign files, using vector files in illustrator .ai format for the QR code shapes.

The project would consist in creating an interface using Vue.js that allows the user to customize his code. On the one hand, the Python backend will have to generate the code itself in vector format starting from the page link, and then merge it with the other vector elements creating a single file. From the front-end it will be possible to choose shapes and colors, seeing a preview of the final code.

Technologies to be used

Python, Django, Vue.js, HTML, CSS, Javascript

Appybros Sagl

	
Website	https://appybros.ch/
Contact	Wahed Mehran, abdul.wahed.mehran@appybros.ch
Number of positions available	2
Company address	c/o USI Startup Centre, via La Santa 1, 6962 Viganello
Mode of work (in presence, remotely, hybrid)	Remotely

Company Description

Appybros is a digital agency that designs and develops web and mobile services for companies that choose to innovate and give more value to their business.

Appybros helps companies to give life to digital transformation, using an approach of co-design and design thinking, to build together a meaningful development path that puts together business objectives with people's needs.

Innovative web development services are at the core of Appybros activities.

Project Title

Testrapido.ch


Project Description

TestRapido is the first software for booking the test and generating the Covid certificate that automates the results for pharmacies and Test centers. (<https://testrapido.ch>)

Technologies to be used

Laravel, PHP, MySQL, JavaScript, Ajax, JQuery.
Maybe also: Alpine.JS, TailwindCSS, Livewire

Assetmax AG

	
Website	https://www.assetmax.ch/
Contact	Yuval Sharon, yuval.sharon@assetmax.ch
Number of positions available	2
Company address	Via S. Balestra 22A, 6900 Lugano
Mode of work (in presence, remotely, hybrid)	Hybrid

Company Description

Assetmax is a leading Swiss software for independent asset managers, family offices and banks with integrated multi custody portfolio management, client relationship management, invoicing and reporting. Several partners make use of the Assetmax Core system to build their own applications as well.

Project Title

Benchmark Application for contextualized activities

Project Description


Write an Application that is able to run a Performance Benchmark on Assetmax, in the specific Assetmax context. The specific context is important so that relevant actions are performed and measured. This would be used mostly to determine whether the current system where Assetmax is deployed has been configured with enough resources, and if not visualize what/where there might be issues (e.g. CPU, Storage, Memory, Database configurations, etc). At the same time the application will be used to understand the impact on the performance when developing/modifying existing code, and/or when deploying new versions e.g. of the database (Postgres in our case).

The tool must be easily extensible to add new APIs/endpoint to benchmark, so it should be developed by keeping flexibility in mind.

Technologies to be used

Java (Spring, JOOQ, ..), Javascript (CXJS), Postgres, other libraries as you see fit for the project

Banana.ch SA

	
Website	https://www.banana.ch
Contact	Project 1: José Del Romano, jose@banana.ch Project 2: Sofia Geronzi, sofia.geronzi@banana.ch
Number of positions available	2
Company address	Via la Santa 7, 6962 Viganello
Mode of work (in presence, remotely, hybrid)	Project 1: hybrid; Project 2: in presence

Company Description

Banana.ch SA is a Lugano-based company founded in 1990. The business is focused on the production and sale of Banana Accounting software. Banana Accounting is a spreadsheet inspired accounting software designed for small business, association managers and individuals. It has sold more than 300,000 licenses in over 120 countries around the world and is a leader in Switzerland. It is also strongly present as a tool for accounting training.

PROJECT 1:

Project Title

Add telemetry to software

Project Description

Telemetry in software provides useful information for developers and maintainers that users are not always able to communicate. Telemetry tools are designed to collect, transform and communicate data on the performance, functionality, processing speed, errors and security events of systems in production.

This project aims to evaluate and discover the characteristics of telemetry frameworks, applying them to an already existing prototype written in C ++.

The tasks are as follows:

- Evaluate the various telemetry frameworks and compile a short report to justify the choice (kuserfeedback, OpenTelemetry, Baical, ...)
- Integration of the chosen framework in the prototype software
- Study the possibilities of telemetry
- Apply telemetry to the prototype
- Analysis of telemetry results
- Briefly document each deployment step

Technologies to be used

webserver, C++, Qt, Qml, Docker

PROJECT 2:

Project Title

Email delivery service monitoring and alerting

Project Description

Study and implementation of a system aim to monitor the status of email sent by the email service and to alert in case of problems.

The email service provides the API and webhooks to receive the status of the sent email. An application must be implemented to receive this data and extract information from it to be displayed and alerted in particular situations.

Technologies to be used

Laravel Framework (PHP), Prometheus, Grafana

BlitzData

BlitzData	
Website	N/A
Contact	Christian Puricelli, christian@blitzcolor.com
Number of positions available	3
Company address	c/o USI Startup Centre, via La Santa 1, 6962 Viganello
Mode of work (in presence, remotely, hybrid)	Hybrid

Company Description

BlitzData is an early stage startup that is developing the BlitzData decentralized database with an open and interoperable protocol that allows applications to easily interconnect with each other. BlitzData is currently in private beta. The first application built on top of BlitzData is a CMS that is at the moment live with Anzeiger von Saanen and some other publishers. BlitzData is built by the founders of LocalPoint and Dubself and a team of 5 experienced developers (former Lastminute, Yoox).

Project Title

Progetto libero basato su BlitzData

Project Description

BlitzData provides a starting point to develop an application by providing to developers different standard functionality out of the box. From authentication to permission management down to specific database rows, to ready-made and customizable interfaces to manage the data, up to advanced security and reliability functionalities. Some of this functionality could be compared to Firebase. BlitzData is currently in private beta.

The goal of the Field Project is to develop an application on top of the BlitzData protocol. What exactly should be built can be decided together with the student. To build the project you can use the BlitzData api provided by the BlitzData client to build javascript or mobile applications or use our Php framework.

For the project we will provide you one developer to support you in the project with whom you can work some days at the USI Startup Center and some days remotely.

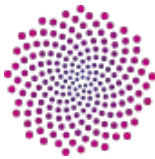
While BlitzData is in itself not a blockchain, it uses different blockchain technologies, so the field project could also be interesting for students interested in blockchain technologies.

The language in the team is english.

Technologies to be used

A dipendenza del progetto Javascript, CSS, Html, Php, Swift, ...

Brightside Capital

	BRIGHTSIDE CAPITAL
Website	https://brightside-capital.com/
Contact	Alessandro Fantini, alessandro.fantini@brightside-capital.com
Number of positions available	3
Company address	Via Nassa 42, 6900 Lugano
Mode of work (in presence, remotely, hybrid)	In presence

Company Description

Family Office - A financial advisor for Ultra High Net Worth Individuals or Families. We manage the interests of 15 Italian families through investment decision and spot-on reporting. We have a mixed imprint between the American world (young motivated team, competitive environment, meritocracy and team before the individual) and Latin culture, promoting, within that framework, your own creativity.

In 2022 the company is undergoing a restructure, spinning-off the newly built IT related service.

Project Title

Fintech Hub - Integration of first class finance softwares and automating the delivery of data

Project Description

We are the leadership team of a Multi Family Office based in Lugano, Switzerland. During the first 5 years in business, we saw the biggest increase in masses in the Consolidation Services which, vis a vis the Wealth Management portion of the business, generates less revenue per Asset Under Management, requires a bigger maintenance but has bigger potential for revenue growth.

The potential fast growth of the Consolidation Services, being a lower margin business and requiring skilled personnel to provide a high touch service to our clients (required when working with Ultra High Net Worth Individuals), has been identified as the bottleneck for the sustainability of our growth in the scalability of the business.

To solve the problem, we built a hub aimed to connect the wealth management custodial data into external software needed to deliver our Services, all while monitoring the data at all time to ensure top quality and applying checks otherwise done manually.

We developed the platform with an architecture that enables us to resell it so, while using the MVP version to ease Brightside daily operation, we are looking to enhance the platform to

become a sellable version SaaS version of our back hand software. 2022 will be dedicated to market the product created so far.

As per your role in the project, below a few ideas:

- Improve the functionalities of the central hub, responsible of managing all integrated data, by continuously monitoring the data within itself.
- Develop a new data integration in input, by taking standard files (CSV, Excel etc..) to be manipulated accordingly and to be integrated inside the Hub.
- Improve the integration workflow with already connected software, through APIs or secure file delivery.
- Develop ex-novo new processes to be added to the umbrella of services we provide.
- Improve data management by interconnect more different data source than we currently do.
- If you are willing to go the extra mile, you could collaborate to some more complex project, that can eventually lead to a Thesis Abstract. In this regard, we currently have one USI Master Student researching a new innovative functionality for our software.

You will join a team of a senior software architect, and 5 other developers. Most the team is ex-USI and everybody is less than 28 years old.

Technologies to be used

Python, Django, Pandas, AWS, SFTP, API, Asynchronous/Synchronous Programming, Web Developing

So far we have been continuing to work with 50% of the students that participated in the course. We hope this data is telling of the intention of Brightside pertaining the field project.

DAC System

	
Website	https://www.dacsystem.ch
Contact	Pietro Casati, pietro.casati@dacsystem.ch
Number of positions available	1
Company address	Tecnopolo Ticino, via Cantonale 18, 6928 Manno
Mode of work (in presence, remotely, hybrid)	In presence

Company Description

DAC System was born in 2013 to develop a solution able to understand what happens in the RF antenna environment and therefore have the possibility to prevent failures in time. DAC System stands for Direct Antenna Control System and represents a unique and innovative solution for the broadcasting world with cutting-edge sensors and devices for monitoring and controlling transmission lines, antenna arrays, power dividers, combiners and filters.

Project Title

Degradation Plot Chart: one widget to rule them all

Project Description

DAC System monitors broadcast systems with the intent of identifying any defects before they can cause damage to the infrastructure. The identification of possible malfunctions is carried out by observing the variations over time in the response of the transmission systems. The response curves, the characteristics of the transmission line and any alarms are displayed through a web application accessible locally. The individual transmission systems send the collected data to a cloud platform (called Apollo) which aggregates and displays them via the web. The platform is under construction and the widget that displays the status of the equipment does not have the same level of maturity as its local counterpart. The student's task will be to make the Apollo widget grow in order to offer all the functionalities made available by the local widget. The technologies used will be Javascript and the Chart.js graphic library

Technologies to be used

Javascript e Chart.js (chartjs.org)

Duferco

	
Website	https://www.duferco.com/
Contact	Fabio Iannello, Fabio.iannello@duferco.com
Number of positions available	2
Company address	Via Trevano 2A, 6900 Lugano
Mode of work (in presence, remotely, hybrid)	Hybrid

Company Description

Duferco is a multinational group active in various sectors including, energy, steel sector, maritime shipping and innovation. The proposed project will be carried out in the corporate innovation group which has, among its objectives, the promotion of digitization within the Duferco group and the introduction of advanced data analytics solutions.

Project Title

Creation of pipelines for the collection, processing and visualization of data in the industrial IoT field

Project Description

The project consists of the creation of an infrastructure for the collection and processing of process data in the industrial sector and the creation of dashboards for real-time viewing. The main objective of the project is to develop an end-to-end tool capable of:


- Read different data sources (data ingestion, typically SQL database, text files and stream MQTT / OPC UA)
- information processing (ETL)
- apply existing algorithms for the definition of metrics of interest (data processing)
- view the information obtained (for example, production KPIs) through simple interactive graphical interfaces.

The context in which this project is inserted is the realization of a proof of concept (POC) in the industrial field, therefore oriented to the determination of the feasibility of some data analysis approaches which, if successful, could lead to a real industrial project. (which is beyond the scope of the project).

Technologies to be used

Technologies and programming languages will be used for data access and processing, including: SQL, python (Pandas, Numpy libraries) and visualization and reporting tools such as Qlik Sense and Grafana. The technology platform will be based on AWS / Azure cloud services.

DXT Commodities SA

 DXT C O M M O D I T I E S	
Website	https://www.dxtcommodities.com/
Contact	Milvia Pedrazzoli, HR milvia.pedrazzoli@dxtcommodities.com
Number of positions available	1
Office address	Via Trevano 2A, 6900 Lugano
Mode of work (in presence, remotely, hybrid)	<i>To be defined</i>

Company Description

DXT Commodities SA is a Swiss trading company specialized in commodities of the energy sector. What sets us apart are the investments in research, analysis and new technologies developed internally. Strengthened by a highly specialized and international team (18 different nationalities), we count 150 people in the main office based in Lugano. Innovation, entrepreneurship, dynamism and efficiency are our main values.

Project Title

Centralization and monitoring of application logs

Project Description

At DXT Commodities there are a large number of applications that perform various types of operations with a frequency that can vary from a few tens to thousands of daily executions for each application.

Such a large number of executions generates an equally large number of information and error logs, which are currently stored on disk and, in the most critical cases, emailed to notify developers and users of the problem.

The project is therefore divided into 3 points:

- 1 - Study and implementation of a centralized log system (example: elasticsearch), including changes needed to make applications, currently used in company, using the new logging system;
- 2 - Analysis of the collected data, aimed at identifying the different cases in which a sequence of events is to be considered relevant, and therefore to be reported;
- 3 - Development of the software necessary to identify the events mentioned in the previous point, and possibly view or notify them using the tools provided by the technologies previously chosen.

Technologies: there are no particular restrictions, it will therefore be possible to explore and adopt new technologies, where useful or necessary.

Other: In case the thing was of interest to the student, it would also be possible to consider the use of machine learning and neural networks as regards the analysis of the logs (point 2).

Stack already present:

- applications: .net 6 and .net framework

- db: Oracle SQL, Redis


- other: python, c, rust

Overall, the project combines various disciplines in a rather balanced way, allowing the student to engage in both data analysis and the integration of new technologies in a real environment, thus acquiring transversal knowledge that is very useful in a work environment.

Technologies to be used

nostro stack è C# e Python

EOC - Ente Ospedaliero Cantonale, Sleep Medicine Unit

	
Website	https://www.eoc.ch/
Contact	Anna Castelnovo, anna.castelnovo@eoc.ch
Number of positions available	3
Office address	Ospedale Regionale di Lugano
Mode of work (in presence, remotely, hybrid)	Hybrid

Company Description

The regional (Civic) hospital of Lugano is a public pluri-specialized hospital that guarantees assistance and specialized care to patients in Lugano and surroundings. It is equipped with modern infrastructures and advanced technologies for both clinic and research purposes. The project will be done in collaboration with the Sleep Medicine Unit, which both treats patients affected by any kind of sleep disorders and conducts high-level clinical research.

Project Title

Developing new tools for sleep analysis using high-density electroencephalography

Project Description


The students will be asked to develop specific tools (graphical interfaces, automatic algorithms) to improve the analysis of the electroencephalographic (EEG) signal during sleep. More specifically, they will be provided with a large database of whole night sleep recordings collected using high-density (hd)EEG. HdEEG is a sophisticated technique to image brain activity during sleep with an exquisite temporal and spatial resolution. The project is highly multidisciplinary and interactive and will pioneer research in the field. It will offer the students the possibility to acquire competencies on sleep, EEG, signal analysis and different research methodologies applied to medicine. We are looking for skilled, motivated, independent students who love new challenges. A good knowledge of programming languages for EEG like Matlab or Python is a mandatory prerequisite. Successful projects will be published in international peer-reviewed journals and authorship will be acknowledged to the students.

Technologies to be used

Data acquisition: EEG signal (256 channels * 8 hours of sleep recording)

Data analysis: Python, Matlab (+ EEG plug-ins like eeglab, brainstorm)/Java

Ex Machina Sagl

	
Website	https://exmachina.ch/
Contact	Sebastiano Cobianco, sebastiano.cobianco@exmachina.ch
Number of positions available	1
Company address	Viale dei Faggi 9, 6900 Lugano
Mode of work (in presence, remotely, hybrid)	In presence

Company Description

Ex Machina Sagl is a competence center for the development of enterprise IT solutions based on open source software. Ex Machina was founded in 2005 and is based in Lugano. With a staff of 25 employees, the company is able to offer professional software development services that include a very wide range of open source technologies mainstream, from relational and NoSQL storage to Java Enterprise solutions, highly interactive Web development, Wireless solutions both native and hybrid.

Among the main customers Ex Machina includes international companies and governments both Swiss and foreign companies, such as Assicurazioni Generali, Post CH, Bravofly Rumbo Group, Alpitour, Cobra Telematics, the City of Lugano. Ex Machina also supports the development of start-up internal initiatives that leverage on innovative use of opportunity offered by the technology.

Project Title

Timelog


Project Description

Migration from a LAMP webapp to the java and spring boot technology stack.

Technologies to be used

java, spring boot, react, angular, kafka

HEGIAS AG

 HEGIAS Virtual Reality – beyond imagination	
Website	http://www.hegias.com
Contact	Andreas Schmeil, Andreas.schmeil@hegias.com
Number of positions available	2
Company address	Via San Gottardo 56, 6900 Massagno
Mode of work (in presence, remotely, hybrid)	Hybrid

Company Description

HEGIAS has developed the first high-end virtual reality content management system (VR-CMS) for a vast range of applications in the architecture, engineering, construction, and design industries. The browser-based platform allows for the creation, editing, and sharing of these interactive scenes, that are experienced on desktop and in standalone immersive VR, alone or in multiuser. <https://www.hegias.com>

Project Title

HEGIAS Virtual Reality Content Management System & Collaboration Platform

Project Description

For this upcoming fall semester, we offer two field project positions at HEGIAS. You will collaborate with our Lugano-based engineering team in the further development of the HEGIAS platform and its extensions. The individual projects will be developed or adapted according to individual skills and interests.

Successful candidates should:

- have experience in one or more of the following: React, A-Frame, three.js, WebVR/WebXR, node.js, python, Unity, C#, 3D modeling (blender, Cinema, etc)
- be enthusiastic about modern web platforms, 3D graphics, virtual reality, remote collaboration, or visual communication
- see opportunities for innovative solutions, not complicated problems
- have a can-do attitude and the drive to deliver great results

We offer:

- a glimpse into the continuing development of an innovative platform and exciting projects for real markets using the latest web technologies, frameworks, and standards
- start-up culture with big corporate clients and projects
- hybrid approach of in-office work and working from remote
- convenient office location next to the train station in Lugano
- possibilities to collaborate with/at our Zurich headquarters office

Used technologies:

Software development at HEGIAS is subdivided in three teams. According to the individual skill sets and preferences, the technologies used in the field project fall in one of the following areas:

- React, node.js, express, databases, AWS
- Unity 3D, A-Frame, three.js, WebVR/WebXR
- Python, 3D modeling (blender, Cinema, etc)

Technologies to be used

Virtual Reality, Typescript, Python, Javascript, Unity (C#), React, nodejs, threejs, WebGL, sockets, WebRTC, BIM, Blender, CAD

HEGIAS is a company that is in the midst of the transformation from a startup to a growth company. After successful completion of the field project there may be possibilities to continue to work with HEGIAS.

Martel Innovate

	
Website	https://www.martel-innovate.com/
Contact	Federico Facca, federico.facca@martel-innovate.com
Number of positions available	2
Company address	Via Besso 27, 6900 Lugano
Mode of work (in presence, remotely, hybrid)	Hybrid

Company Description

Martel is a dynamic Swiss-based digital innovation agency with more than 25 years' experience empowering organisations across Europe and worldwide, throughout their journey from novel ideas to technological implementation, media and market strategy.

Project Title

Re-engineering Martel's Lego Smart City

Project Description

Back in 2019, Martel developed a Lego Smart City to demonstrate its Smart City platform (<https://orchestracities.com/>). The demonstrator is made of different sensors integrated via Lorawan and other protocols via Arduino and Raspberry PI boards. Data is collected from the sensors and sent to a cloud-based platform.

See demo here: <https://www.youtube.com/watch?v=S4pi8rQUHw>


Following the experience in using it as a demonstrator at different events, we would like to redesign both the Hardware and the Software part, the project offered will deal with this task. In particular:

1. Replace currently "patch" wired sensors, with more easy to plugin sensors based on Grove System (<https://www.dexterindustries.com/grovepi/>)
2. Rewrite the sensor related software to make use of grovepi libraries, and package each data collection module as docker.
3. Orchestrate the configuration of raspberrypi cluster with mender.io
4. Deploy dockerized modules on the raspberrypi using kubernetes (microk8s or similar).
5. Develop a novel "digital twin" dashboard of the lego city using a 3D model and real time data coming from the sensors.

Technologies to be used

RaspberryPI, Python, React, Docker, Kubernetes, Mender.io, NGSI-LD

Mobitrends SA

	
Website	https://www.mobitrends.ch/
Contact	Massimo Brignoni, massimo.brignoni@mobitrends.ch
Number of positions available	1
Company address	Via Francesco Somaini 7, 6900 Lugano
Mode of work (in presence, remotely, hybrid)	In presence

Company Description

We are a company active in the field of mobility with a strong orientation to technology and innovation. We propose and develop products and services for individuals, companies and institutions to help them design optimal and low environmental impact mobility solutions.

Project Title

Development of web pages of the Mobalt application


Project Description

Mobalt is a solution designed for the complete management of corporate mobility. Companies can enter employee data to obtain an analysis of home-to-work travel and the potential of the different mobility solutions. They can then choose to implement some offers (for example company shuttles, carpooling, incentives for the use of bicycles). Thanks to the Mobalt app, collaborators can take advantage from the provided alternatives, while administrators and company managers can follow the progress of the promotion campaigns. The project will be focused on the web front end. Starting from the modification of an existing page, depending on the interest and skills of the student, the difficulty of the project will progressively increase until the autonomous implementation of one or more pages.

Technologies to be used

Angular, css, html5, javascript, devextreme components

Omnibus Engineering SA

 Omnibus Engineering	
Website	https://www.oeomnibus.ch/
Contact	Paolo Seveso, paolo.seveso@oeomnibus.ch
Number of positions available	2
Company address	Via Carvina 4, Taverne Torricella
Mode of work (in presence, remotely, hybrid)	Hybrid

Company Description

Omnibus (<https://oeomnibus.ch>) è una società di ingegneria con sede in Taverne. È costituita da 8 persone, con skill informatico ed elettronico.

Si occupa della progettazione e sviluppo, sia hardware che software, di soluzioni in ambito building automation, controllo degli accessi e automazione industriale.

Project Title

Home Assistant - Analisi ed integrazioni

Project Description

Lo scopo del progetto è analizzare l'architettura generale del sistema open source Home Assistant (<https://www.home-assistant.io/>), attualmente il più diffuso sistema open source di gestione domotica. Dovranno essere analizzate le potenzialità di customizzazione e scripting, in particolar modo integrando il protocollo di domotica KNX e i servizi Google e Alexa.

Sarà reso disponibile un kit di test basato su Raspberry PI e devices KNX.

Da valutare comunque una ulteriore installazione, a scopo comparativo, in ambiente Windows. Il progetto proseguirà quindi con un approfondimento sulle capacità di Home Assistant per l'analisi dei consumi energetici (analisi grafica, storicizzazione dei dati, gestione di eventi legati ai dati acquisiti, ..).

Non mancherà un excursus sulle REST API disponibili, con lo scopo di utilizzare Home Assistant solo come gateway a basso livello.

Infine, si potrà provare a realizzare un prototipo di un driver custom generico in ambiente Linux e linguaggio Python.

Technologies to be used

Python, Linux / Raspberry PI, Windows 10 IoT, Docker, Visual Studio Code, Git

Physei SA

Physei SA	
Website	N/A
Contact	Stefano Gamberoni, stefano.gamberoni@theseiconsulting.ch
Number of positions available	2
Company address	Via Zorzi 15, 6900 Paradiso
Mode of work (in presence, remotely, hybrid)	Remotely

Company Description

In Physei we are developing the rec360.ch project which is an electromechanical device for capturing 360 degree photos of e-commerce products. The captured photos are published in the cloud (keyCdn.com in SaaS) and usable as "roller 360" (360-javascriptviewer.com in Saas).

Project Title

rec360 photogrammetry

Project Description

Physei will provide its tool to capture 360 photos of the products. Students will be able to use it to capture at least 3 series of 360 images from different angles of the same product. These series of photographs (at least $36 \times 3 = 108$ photos) will be the input to derive the 3D model of the product using photogrammetry. Students are asked to evaluate existing technologies (such as SaaS services), propose which is the most suitable to be integrated into the REC360 product, define and implement the workflow of the integration process. The ultimate goal is to improve the REC360 product by generating 3D models of the products to be made available in the cloud.

Technologies to be used

REC360 hardware which is Physei SA's portable tool for capturing 360 photos. REC360 client side uses PWA Progressive Web Application technology, server side uses Javascript.

The transition from internet 2.0 to the metaverse is underway. Ecommerce product photographs are unusable in the metaverse. REC360 Photogrammetry virtualizes any physical product in 3D.

Talent4GIG AG

talent4gig.	
Website	https://www.talent4gig.com/
Contact	Nicola Palumbo, nicola@talent4gig.com
Number of positions available	1
Company addresses (Zürich & Lugano)	Birkenstrasse 17, 8306 Zürich-Brütisellen; c/o USI Startup Centre, via La Santa 1, 6962 Viganello
Mode of work (in presence, remotely, hybrid)	In presence @USI Startup Centre

Company Description

Our vision is to continue to develop our data-driven AI platform to use source code to verify hard & soft skills for your tech teams.

Project Title

Data Driven Skill Verification Platform


Project Description

Our ultimate goal is to create a data-driven global platform that connects the right skills to the right position. Unlocking new opportunities and increase diversity through market-leading skills verification.

Technologies to be used

React, Python, Cloud Infrastructure.

xFarm Technologies SA

	
Website	https://xfarm.ag/
Contact	Martino Poretti, martino@xfarm.ag
Number of positions available	2
Company address	Via Cantonale 18, 6928 Manno
Mode of work (in presence, remotely, hybrid)	Hybrid

Company Description

xFarm is a company oriented to the agriculture digitalization, providing innovative tools for entrepreneurs and actors of the agri-food chain in the management of companies. Its main focus is simplicity of use, intuitiveness and complete adaptability. The digital ecosystem includes an application (mobile and desktop) advanced modules, an Analytics dashboard dedicated to professionals and a line of IoT sensors selected, optimized and connected by xFarm.

Project Title

Development of a back-end for two new modules

Project Description


The development of two new backend components linked to the xFarm IoT Hub is planned within the xFarm platform: Irrigation automation and Automatic monitoring and counting of insects with forecasting model integration.

Knowledge of PL-SQL (Timescale DB, PostgreSQL) is required to support the back-end development. You will have to interface VerneMQ, DB Timescale, NiFi, Kafka, AWS Lambda and develop APIs to expose all the services and be able to hook a GUI.

Technologies to be used

Timescale DB (PostgreSQL), VerneMQ, Kubernetes, NiFi, Kafka, AWS Lambda, S3, GCP, AWS

Zucchetti Switzerland

	
Website	https://www.tcpos.com
Contact	Michel Primo, Michel.primo@zucchetti.com
Number of positions available	1
Company address	Centro San Martino, Via Moree 16, 6850 Mendrisio
Mode of work (in presence, remotely, hybrid)	In presence

Company Description

Zucchetti is one of the most important companies in the IT sector worldwide. With more than 8000 employees, a nationwide distribution network exceeding 1.650 Partners in Italy and 350 in over 50 countries in the world, and more than 700.000 customers.

Project Title

Extend TCPOS Click&Collect Module

Project Description

The TCPOS software offers an ecosystem of applications focused on the management of retail and hospitality stores.

The Click&Collect module is the web application that provides web store and the interaction of customers from their home with the other TCPOS applications.

The module needs to be extended in some of its functionalities:

- Display and redeem points associated to a customer
- Display the allergens related to food and specify the allergies for customers
- Implement geolocation of customers
- Allow to switch the language of the user interface
- Delete pending orders
- Display Re-send invoices

Technologies to be used

HTML, CSS, Javascript, Vue.js, React, C#, .Net, SQL Server, Oracle, PostgreSQL

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6900 Lugano
Switzerland

from Mauro Prevostini
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e-mail mauro.prevostini@usi.ch
web www.inf.usi.ch
date **GG.MM.2022**

Contratto Field Project

Titolo Progetto: **xxxxx**

L'Università della Svizzera italiana
Via Lambertenghi 10A - 6900 Lugano
rappresentata dal Rettore, Prof. Boas Erez, e da Cristina Largader, Direttrice Amministrativa
(in seguito USI)

L'azienda **nome dell'azienda**
indirizzo
rappresentata da **nome e cognome**
(in seguito Azienda)

Lo/La studente/ssa **nome e cognome**
indirizzo
(in seguito Studente/essa)

stipulano il seguente contratto nell'ambito del corso Field Project del programma di Bachelor
in Scienze informatiche.

- Art. 1**
Assegnazione field project
1. Lo/La Studente/essa partecipa al Programma di Bachelor della Facoltà di scienze informatiche che prevede lo svolgimento di un field project in collaborazione con un'azienda, nel corso del quinto semestre (19 settembre – 23 dicembre 2022).
 2. L'Azienda mette a disposizione un progetto nell'ambito del field project che verrà svolto dal/dalla Studente/essa.
 3. Il progetto è formalmente presentato dall'Azienda allo/alla Studente/essa durante il kick-off meeting all'inizio del semestre.
- Art. 2**
Svolgimento del field project
1. Il field project si svolge tutti i giovedì e venerdì durante il quinto semestre del programma di Bachelor in scienze informatiche per la durata massima di 14 settimane. Inizia con il Kick-off Meeting (il 22.09.2022) e termina con la presentazione finale da parte dello/della Studente/essa (il 16.12.2022).
 2. Lo svolgimento del field project equivale a 9 crediti ECTS corrispondenti ad un impegno di, al massimo, 210 ore. Vale a dire un impegno medio di circa 15 ore settimanali.
- Art. 3**
Divulgazione di informazioni aziendali
1. L'Azienda mette a disposizione dello/della Studente/essa tutte le informazioni e i documenti necessari per realizzare il progetto in modo soddisfacente.
 2. Lo/La Studente/essa non è autorizzato/a a divulgare informazioni aziendali ad eccezione dei temi sviluppati nell'ambito del progetto.
- Art. 4**
Supervisione del progetto
1. L'Azienda si impegna a mettere a disposizione un membro del suo staff come supervisore delle attività di progetto che verranno svolte dallo/dalla Studente/essa, così come per la preparazione del rapporto e della presentazione finale.
 2. L'USI metterà a disposizione il professore responsabile del "Field Project" con l'obiettivo di seguire, a scadenze regolari, i progressi dello/della Studente/essa durante lo svolgimento del progetto e si assicurerà che le attività adempiano ai requisiti richiesti.
- Art. 5**
Rapporto finale
1. Lo/La Studente/essa presenta i risultati del suo progetto durante la sessione finale chiamata "Presentazione del rapporto finale".
- Art.6**
Valutazione
1. La valutazione del field project verrà condotta sia dall'Azienda che dal professore responsabile.

Art. 7
Rimborsi spese

1. Le spese sostenute dallo/dalla Studente/essa nella realizzazione del progetto sono coperte dall'Azienda. In particolare, il rimborso di spese di viaggio e alloggio, incontri e gruppi di lavoro, copie, libri, produzione di report, ecc.
2. Il metodo di rimborso sarà organizzato caso per caso tra lo/la Studente/essa e l'Azienda.

Art. 8
Compensazioni

1. Per la realizzazione del progetto, nessuna compensazione è dovuta dall'Azienda né allo/alla Studente/essa né all'USI.
2. Qualsiasi forma di compensazione che può essere accettata al di fuori di questo contratto tra l'Azienda e lo/la Studente/essa deve essere comunicata all'USI.
3. Se un compenso extra-contrattuale dovesse essere la fonte di disaccordo tra le parti firmatarie del presente contratto o dovesse compromettere il positivo completamento del progetto, l'USI sarà libera di intervenire come arbitro al fine di trovare un accordo accettabile da tutte le parti.

Art. 9
Diritti di proprietà intellettuale

1. La proprietà intellettuale appartiene all'Azienda che detiene tutti i diritti patrimoniali su quanto verrà prodotto dallo/dalla Studente/essa per la durata del field project.
2. I diritti d'autore del prodotto appartengono sia allo/alla Studente/essa sia all'Azienda.

Art. 10
Confidenzialità

1. Per "Informazioni riservate" si intende qualsiasi informazione scientifica, finanziaria, commerciale, operativa o di altro tipo tecnico, scambiata in qualsiasi forma e il cui accesso è dato dalla parte rivelante per la parte ricevente.
2. Lo/La Studente/essa e l'USI devono mantenere la confidenzialità per quanto riguarda le informazioni riservate dell'Azienda e impegnarsi a non utilizzare per scopi diversi i soggetti del progetto. Essi non sono autorizzati a diffondere o copiare queste informazioni senza l'esplicita autorizzazione scritta dell'Azienda. Se così richiesto dall'Azienda, lo/la Studente/essa deve restituire tutti i documenti messi a disposizione dell'Azienda stessa.
3. Tutte le informazioni riservate messe a disposizione dello/della Studente/essa dall'Azienda possono essere rivelate solamente nell'ambito del progetto.
4. L'obbligo di riservatezza delle informazioni comunicate dall'Azienda ha una durata di cinque anni. Lo/La Studente/essa e l'USI si impegnano a informare le altre persone coinvolte direttamente o indirettamente con il progetto che la clausola di riservatezza ha una prescrizione di cinque anni.

Art. 11
Validità e durata

1. Questo contratto è valido dal momento della firma delle parti.
2. Se non diversamente indicato, questo contratto è in vigore fino alla fine del Field Project. Esso può essere annullato da entrambe le parti, con due settimane di preavviso.
3. In casi gravi, in particolare le gravi violazioni di dovere, danno diritto alla parte danneggiata di annullare il contratto senza essere ritenuta responsabile per le spese prodotte dall'annullamento.
4. In caso di annullamento, tutti i documenti messi a disposizione dello/della Studente/essa dall'Azienda saranno restituiti.

Art. 12
Applicabilità della legge, conflitti e autorità giuridica

1. Il presente contratto è regolato dalla legge svizzera.
2. Le parti si adoperano per risolvere qualsiasi controversia relativa all'interpretazione o esecuzione del presente contratto amichevolmente. Nel caso in cui non si raggiunga un accordo, le parti riconoscono la competenza esclusiva del Tribunale della Città di Lugano.

Art. 13
Modifiche del contratto

1. Qualsiasi modifica o aggiunta al presente contratto devono avvenire per iscritto e richiedono firme giuridicamente vincolanti delle parti per essere valide.

Art. 14
Stesura

1. Questo contratto viene redatto in 3 copie. Ogni firmatario riceve una copia debitamente firmata.

Luogo e data

Azienda
rappresentante

Luogo e data

Studente/essa

Luogo e data

USI – Facoltà di scienze informatiche
Mauro Prevostini,
responsabile Field Project

Luogo e data

USI
xxxxxxxxxx, Rettore

Luogo e data

USI – Direzione Amministrativa
xxxxxxxxxxxxxxxx

