

Internship Proposal n. 1

Data Engineering - From a monolithic application to microservices architecture

Description:

The focus of the internship is the **migration of a monolithic application to a microservices-based architecture**. The application to be converted automates and executes ELT (Extract, Load, Transform) workflows and currently utilizes services provided by the application itself, except for the database, which is external.

Objectives:

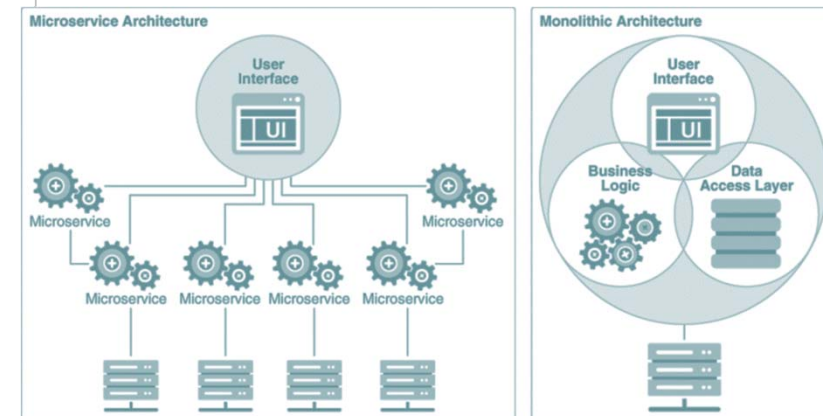
The project's objective is to **leverage external serverless services** for the application to **reduce costs** and minimize the **risk of failures**.

Expected activities:

The student will learn how to **migrate an ELT workflow** to Cloud Functions and she/he will learn how to use different services for **task queue management** (i.e. Cloud Pub/Sub or Cloud Tasks).

Specific skills required:

Python programming language knowledge.



Internship Proposal n. 2

Data Engineering – Modern Data Stack Realisation

Description:

The focus of the internship is the implementation of the **main components of a Modern Data Stack** (ELT, Orchestration, Analytics Engineering, Observability), by using specific **open-source libraries/tools** (that have also an enterprise version counterpart).

Objectives:

The project's objective is to **learn how to implement a specific use case** by using the newly created pipeline (i.e. a typical omnichannel marketing hub or a customer 360 hub).

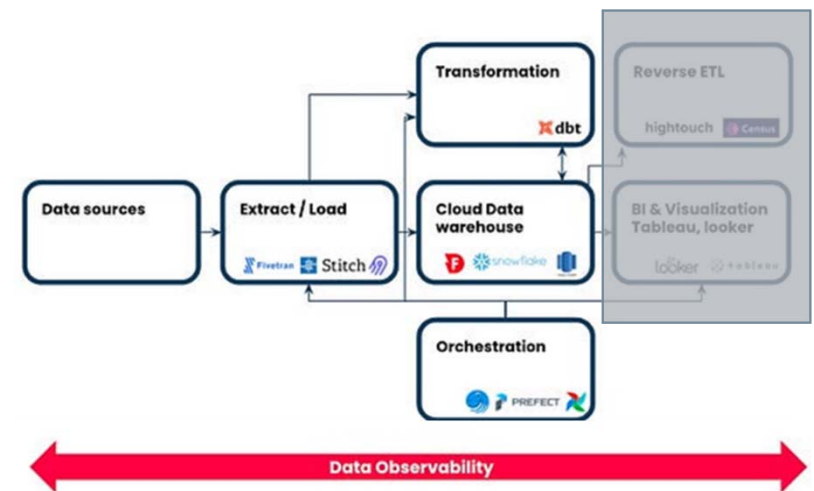
Expected activities:

The student will study how to **use/interact with the libraries** and to **create a pipeline**. The identified tools are: Orchestration Layer (Prefect o Airflow), ELT layer (Airbyte), Analytics Engineering layer (dbt core), Observability layer (Elementary Data o Great Expectations).

She/he will **learn how to automate the pipeline provisioning** by using Google Cloud Deployment Manager.

Specific skills required:

Basic programming skills, especially **Python** language.



Internship Proposal n. 3

Data Science - Synthetic Time Series Data

Description:

Synthetic data are nowadays considered one of the most promising frontiers of **generative AI**. Companies are struggling with a systematic lack of data of good quality. Having good data is a mandatory prerequisite to start any AI powered analysis (i.e. predictive analysis, anomaly detection).

The internship will focus on **time series generation** (i.e. marketing or financial historical data). She/he will learn **different techniques to generate synthetic data** and will **evaluate their performance** based on quality metrics.

Objectives:

The project's objective is to successfully generate synthetic time series data, by using different generative methods starting from a common dataset and to compare the results in terms of **statistical distribution quality score** and **anonymity score** of the generated data.

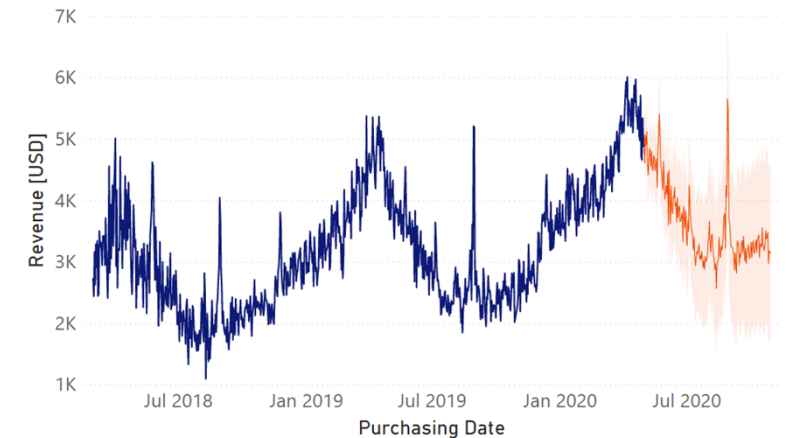
Expected activities:

The candidate will test **different algorithms** to generate new data, like **VAE** or **GAN**; and to **develop python code to evaluate the relation** between time series vector representations. This is a hot topic for many different projects, also the conversion to vector is a very useful skill in similarity-based forecasting approaches.

Specific skills required:

Good programming skills (Python or R) and **some experience in Deep Learning** projects (also academical).

Revenue by Purchasing Date



Internship Proposal n. 4

Data Science - Customer Pattern Analysis

Description:

The internship will be focused to work with **customer navigation data** from a typical digital analytics tool, like Adobe Analytics or Google Analytics. Each navigation session will be **converted into a graph** based on the customer's website structure and it will be **processed using graph theory and graph neural networks**.

Objectives:

The project's objective is to use this approach to **extract many insights** from data like **propensity score, clustering, event level attribution**, etc. This approach, if developed in a quite general way, could be applied to many different customers.



Expected activities:

The student will learn how to **create, handle graph structures** and how to **develop graph neural networks** for a digital marketing use case.

Specific skills required:

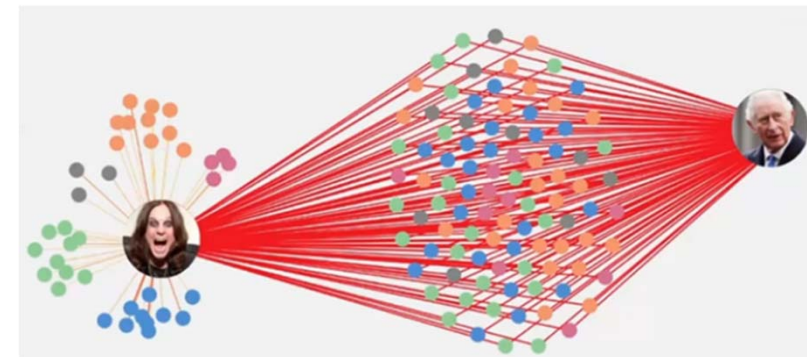
Good programming skills (Python or R) and **some experience in Deep Learning** projects (also academical).

FILTER BASED ANALYSIS

KING	
PRINCE CHARLES III	OZZY OSBOURNE
	
Men	Men
Born in 1948	Born in 1948
Live in UK	Live in UK
Married 2x	Married 2x
Lives in a castle	Lives in a castle
Upper Class	Upper Class
Conservative	Aggressive

Vs.

CONTEXT BASED ANALYSIS



Internship Proposal n. 5

Modern BI – From Zero to Dashboard

Description:

The Project proposes the **creation of a dashboard solution for integrating** all the main aspects linked to a specific area to be agreed upon, such as main **KPIs, trends and distributions**, declined on the basis of the most relevant dimensions, **creating all the underlying data from scratch** in a SQL-like environment.

Objectives:

The final product will be a **set of dashboards for** multiple purposes starting from the **C-level users** to the **domain specialist** who need **to inspect and explore the data** from many points of view.

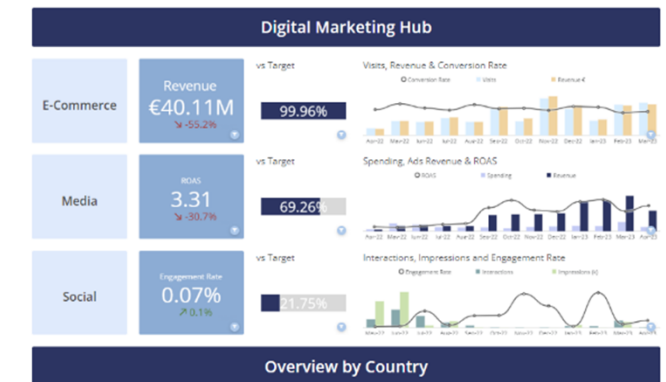
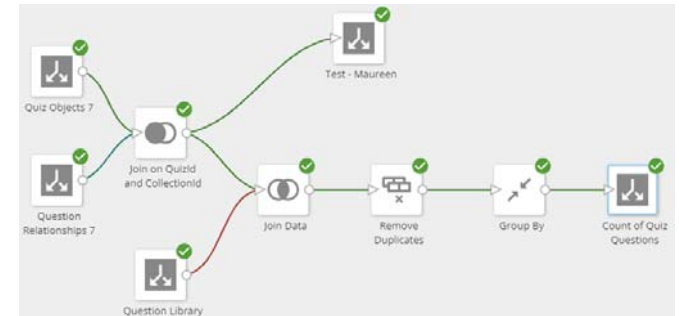
Expected activities:

The student will **create relevant datasets** from scratch via SQL, **define a data model** according to dashboard goals and **create final dashboards**.

She/he will learn the data visualization fundamentals, how to present business data using dashboards and consolidate SQL knowledge.

Specific skills required:

Good SQL knowledge, curiosity for data visualization.



Country Overview

Country	Revenue	Conversion Rate	Visits	Engaged Visits
Austria	€16,560	5.66%	22,562	12,114
Belgium	€17,336	5.85%	14,541	10,761
Denmark	€3,847	7.41%	6,140	4,537
Finland	€1,135	5.06%	2,401	826
France	€219,206	5.97%	274,510	246,177
Germany	€212,068	5.86%	175,310	139,916
Ireland	€7,221	5.69%	11,740	8,873
Italy	€127,740	5.87%	165,310	124,210
Netherlands	€23,064	5.85%	47,591	35,801
Norway	€12,726	5.67%	19,020	7,729
Portugal	€1,824	5.19%	3,580	4,121
Spain	€12,211	6.11%	19,110	11,711
Sweden	€10,587	3.80%	26,170	19,676
Switzerland	€7,311	5.38%	6,480	4,892
United Kingdom	€163,497	5.93%	168,500	146,460

Why BitBang ?

- High probability of being hired after the internship (62 % in 2023)
- Young and dynamic workplace (avg. age of staff is 36)
- Very collaborative and low stress environment
- Personalized career path with the possibility of job rotation
- Working hours that respect people's private lives
- Opportunity to work on innovative topics (i.e. generative AI)
- Possibility to learn by interacting directly with our clients