Internships Summer 2019

Project Descriptions and Requirements

http://linc.ucy.ac.cy/

Title	Server room Air Conditioning power consumption measurement using Arduinos, Raspberry Pis through ModBus and TCP communication protocols
Project Description	The purpose of this project is to extract in real-time power consumption measurements from server room air-conditions. Within the scope of the ENEDI project, we would like to measure the power consumption of the air conditions installed in the server room. Such appliances consume large amount of energy and there is no trivial and inexpensive mean to measure the power consumption. Solutions in the industry consist of installing analog sensors on the electrical power main board of the room and connecting a Datalogger extended with HTTP capabilities for disseminating the extracted data. The problem with this approach is that peripheral components such as the datalogger and the HTTP module are expensive and most of the times are accompanied with proprietary software and protocols. To this end we need to propose a much cheaper yet efficient way to extract, disseminate and store power consumption measurements using Raspberry Pis and Arduinos
Technical Skills	- Familiarity with Raspberry Pi and Arduino Programming(Desired) - Docker containers - Understanding of communication protocols HTTP Modbus(desired) (Time Series) Databases - Front-end technologies (HTML, CSS, JS(Typescript) , Angular(desired)) and visualization libraries
Project #	1

Project Description	Structural representation of news articles using Natural Language Processing (NLP) and Linked Data paradigm. This will support the identification of fake news articles via fact checking.
Project #	2

Project Description	Analyze the development of syntax, grammar and linguistic properties of fake news in time, by collecting known fake news articles from 2012 to today and analyzing them with Natural Language Processing (NLP)
Project #	3

Project Description	Infer the location of tweets, coming from Twitter stream, using content, user and network level indications.
Project #	4

Title	Develop, Deploy and Manage a microservice application using the UNICORN platform
Project Description	The purpose of this project is to develop, deploy and manage a microservices application using the UNICORN platform. The intern will have the opportunity to gain useful skills required by modern cloud software applications, such as microservices concepts, containerization, CI/CD and orchestration.
Technologies	- Java - SpringBoot (Rest API) - SpringCloud - It contains a lot of libraries for supporting microservices patterns (e.g., service discovery, central configuration, etc.) with only 1 annotation. - Docker - UNICORN
Project #	5

Title	Detect Twitter accounts belonging to companies
Project Description	- You will use a pre-made dataset which contains Twitter accounts which they belong to companies or individual users. - Collect the tweets and Twitter profile info of the companies and the individual users from the Twitter streaming API. - Use pre-trained classification algorithms for recognizing the sentiment and the topic of each tweet. - Analyze the companies and the individual users Twitter activity in order to identify significant features and differences between them. - Build a simple prediction model in order to automatically predict the Twitter accounts that belongs to companies.
Key Technologies	- Python - HTTP requests to APIs (e.g. Twitter Streaming API) - Database (e.g. mongodb) - NLTK - SPSS/R - Scikit-learn
Project #	6

Title	Improve Text Quality on User-Generated Text
Project Description	When analyzing user-generated text (e.g. social media, web forums, online reviews), a major problem is the informal writing of each user that is considered noise. This can be related to slang words (e.g. "bae" instead of "boyfriend / girlfriend"), hashtags (e.g. "#iloveher" instead of "I love her"), typos (e.g. "wit" instead of "with") or other noisy words (e.g. "gooood" instead of "good"). The aim of this project is to find related vocabularies and libraries and use them in a dataset of tweets in order to improve the text quality for later analysis.
Key Technologies	Python ● NLTK ● Compound-word-splitter ● TextCleanser ● SlangNet ● ...
Project #	7

Title	Visualization of sunlight projection on a Leaflet map.
Project Description	The project focuses on the sunlight projection across a web-based responsive map, preferably using the Leaflet JavaScript library, using a given time/date and location. An example of the end product can be found here: https://codepen.io/paulnoble/pen/qZaNRB
Key Technologies	Through this project the following key technologies/tools would be use: **General** ● Slack: Communication ● Trello: Organizing Project Progress ● Git: Code Versioning using GitHub/GitLab/Bitbucket ● Visual Studio Code (VSCode): Source code editor **API** ● Node JS / PHP / Python / Golang / Java **UI** ● HTML5, CSS3 (or SCSS/SASS), JavaScript ES6: Core technologies for websites ● Bootstrap/MaterializeCSS: JavaScript Frameworks for responsive support ● Leaflet JS: JavaScript library for mobile-friendly interactive maps ● Angular 7+ (Optional): Integration with the ENEDI Web App
Project #	8