Manoj Manivannan

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Professional Experience	**Infovista Italy S.R.L (formerly Empirix Italy S.R.L), Italy** Modena, Italy	**February 2018 to Present**

Data Analyst Engineer + Tech Lead - *Data analytics & visualization*

- Led *design*, *development,* and *integration* of *data adapters*, *analytic metrics/KPIs* and *aggregators* to consume google protocol buffer SIP stream and provide *business insights/reports* on STIR/SHAKEN for telecom CSPs, generating sales of around $2M in 18months.
- *Troubleshooting* and *root cause analysis* of data integrity failures on customer AWS clusters + c*reate/modify* CI/CD pipelines.
- Data transformation troubleshooting on **postgres** and **clichouse** DB on AWS cluster.
- Scrum master since 2020 & Tech lead of Solution packages (Customer offerings) development.

Data Analytics & Optimization for Energy Applications Laboratory, Politecnico di Milano, Piacenza, Italy	**October 2016 to October 2017**

Research Assistant – *Machine learning, Smart meter Data analytics and Data Science*

- Data extraction from public dataset, Data Cleaning and analytics using Python:pandas.
- **Developing a data-driven model** to **forecast** the behaviour of **HVAC** systems with around 85% accuracy benefitting cost savings around 5% for energy providers serving smart grids.
- **Time series analysis:** Neural Networks, Regression

ElektroThermalKinetics Pvt Ltd, Chennai, India	**April 2013 to June 2014**

Engineer – *Project Manager*

- Technical consultant, Design, & engineering of research equipment for combustion applications at IIT, Madras

Education	**M.Sc. Energy Engineering (Renewables and Sustainability)** Politecnico di Milano, Piacenza, Italy	**September 2014 to October 2017**

- Energy systems, industrial heat & power technologies, Low carbon technology and renewables, Electric conversion of renewable energy sources using wind and solar power.
- Data analytics on Building Energy Management Systems dataset using pandas

B.Sc. Mechanical Engineering Anna University, Chennai, India	**June 2008 to August 2012**

- Computational Fluid Dynamics, HVAC systems for buildings, Finite Element Analysis

Skills	

- Python (***Packages:*** Scikit-learn, pandas, numpy, matplotlib, PyTorch)
- ETLs (proprietary methods)
- SQL (Postgres, Clickhouse)
- Shell scripting

Operating System: Windows & Linux
Experience with tools: Docker, Maven, AWS & Kubernetes, GCP, Apache Spark & Airflow fundamentals.

Personal Projects	

- Data Science:
  - Data visualization & prediction on several data sets including COVID-19 & Bike sharing. Here 🌐.
  - Basics of machine learning using PyTorch and deployment
- Software development + CI/CD by developing from scratch, a cloud native application to track the International Space Station. Click 🦊 to check the Gitlab hosted project.

Academic Projects	**M.Sc. Thesis: Machine learning-based prediction of HVAC load by smart meter analytics**

- Using open-source toolkits to build a model using NILM (Non-Intrusive Load monitoring) techniques and machine learning to estimate demand response by forecasting energy usage of HVAC systems using publicly available datasets. Perform **data extraction, cleaning and transformation using pandas**. Techniques and tools include Python, scikit-learn, especially neural networks, Random Forest decision tree and SVM. The aim is to reduce user utility costs without comprise of comfort. Enabling demand identification for the smart grid and reduction of primary energy source.

Energy & Environmental technologies for building systems
- Analyse and visualize the yearly energy consumptions of a multi-story commercial building with specific application & location using Residential Load Factor method implemented in Python. The analysis included different thermal zones, user defined construction sets and schedules and other parameters.

IoT smart incubator (Data-driven systems control)
- In-house smart incubation unit with DS18B20 temperature sensor, LDR GL5516 photo resistor, 40W heating unit, ventilation, TowerPro SG90 servo motor connected to a Raspberry Pi 3 (GPIO) ports and coded using Python. On-demand ambient conditions maintenance with quick variability and 0.5°C sensitivity.

Awards	• **Winning Team** of an innovation contest for international students from engineering and business backgrounds organised by **ASTER** in collaboration with **ER.GO** and launched by **VERTIV** (Emerson Network Power) at **Research to Business 2017** (12th International Exhibition on Industrial Research and Competences for Innovation), Bologna, Italy. Secured €1000 reward for the most creative and feasible business strategy. • Recipient of **Gold scholarship** (complete waiver) for the 2-year master's degree at Politecnico di Milano, Italy • Event Manager in INGENIOUS' 12- A National Level Design Competition organized by the Society of Mechanical Engineers at Rajalakshmi Engineering College, Chennai, India.
Publication	Machine learning based short-term predictions of air-conditioner loads through smart meter analytics, Article: Energies Journal MDPI, 2017. Link to publication MDPI
Languages	• English – Professional proficiency • Italian – Intermediate • Tamil – Native speaker