

# Yu-Sheng (Adam) Tang

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## Education

University of Freiburg Germany

Oct 2018 - Feb 2021

Master of Science in Sustainable Systems Engineering

German Grade: 1.7, GPA: 3.6/4.0

Chang Gung University Taiwan

Sep 2012 - Jun 2016

Bachelor of Science in Mechanical Engineering

German Grade: 1.3, GPA: 3.8/4.0

\* Dean's list Award: Feb 2014, Sep 2014, Feb 2015

## Skills

**Languages:** Python, MATLAB, HTML/CSS, JavaScript, C++, Bash, LaTeX  
**Databases:** MySQL (SQL), GraphDB (SPARQL)  
**Frameworks:** Flask, PyTorch, Pytest, Bootstrap  
**Data Skills:** ETL pipeline, RESTful API, data wrangling, web scraper, web crawling, data warehousing, DevOps

**Tools & Techs:** pip, Git, GitHub (Action), GitLab (CI/CD), Jenkins, Docker, Data Space, AWS  
**Management:** Jira (administrator), project management, agile management, requirement engineering  
**Certificate:** IBM Data Science Professional Certificate, International Requirement Engineering

## Experience

Data Scientist | Fraunhofer EMI | Germany

Oct 2021 - Present

### Technical Skills:

- Developed an Ontology more than 2000 datasets and a knowledge graph for additive manufacturing processes, using SPARQL and Python for data analysis and queries, enhancing data workflow.
- Designed and architected data space infrastructure; established and implemented project-specific data space components.
- Constructed an efficient data ETL pipeline in Python, significantly enhancing the efficiency of data processing.
- Bridged multiple database APIs to feed a data lake, and implemented advanced data parsing techniques using Python.
- Created a Python package and RESTful API to streamline data processing for team members, enhancing productivity and code reusability.
- Implemented a CI/CD pipeline for automated testing, releasing, and deployment, ensuring high-quality code and efficient project delivery.
- Deployed and integrated a large language model, Llama 2, using Docker and Flask into data pipeline.

### Project Management:

- Mentored and supervised a master's student, providing guidance throughout the course of the project and the development of their thesis.
- Developed a universal use-case guideline and template for UML diagrams, significantly enhancing the efficiency and quality of software development processes within the project.
- Managed requirement engineering, agile project management, and project execution for a team of 20 people using Jira, streamlining workflows and improving efficiency.

Research Assistant | Fraunhofer EMI | Germany

May 2020 – Sep 2021

- Conducted standard ball drop tests on CFRP configurations, mirroring those used in bird strike scenarios, using LS-DYNA.
- Simulated the failure of a single-lap hybrid joint (Aluminum-CFRP) under tensile loading using LS-DYNA.
- Calculated essential numerical parameters, analyzed simulated results, and developed data visualizations using Python.

Research Assistant | INATECH | Germany

Dec 2019 – Mar 2020

- Built numerical models of small-scale pivot specimens for torsion tests using LS-Dyna software.
- Conducted small-scale material characterization experiments using cyclic stress loading, leveraging Python for the optimized control of stepper motors based on signal frequency, speed, and gear ratio.
- Analyzed simulated results and developed data visualizations with Python to aid in interpretation of the results.

## Projects

HERAKLION - Heuristic Resilience Analyses for Municipalities Using Data Space Functionalities

Mar 2022 – Present

**Tech Stack:** pip, git, CI/CD, Devops, ETL, RESTful APIs, Python, package-building, KG, requirement engineering, agile management

- Aimed to enhance crisis data accessibility and usability for municipalities and emergency forces by creating a data 'ecosystem.' Developed a scalable resilience data space demonstrator, addressing user needs and ensuring all stakeholders access to critical information for effective and timely crisis responses. The model is intended for nationwide use in Germany.

ADAM-SusTrace - Networking of digital assets and data-driven value creation through data ecosystems in additive manufacturing

Oct 2021 - Feb 2022

**Tech Stack:** git, Python, algorithm, Ontology, knowledge graph, LCA

- Applied digital traceability in additive manufacturing to conduct comprehensive sustainability analyses (Life Cycle Assessment, LCA). Assisted in developing tools and workflows, enhancing data ecosystem's value, and facilitating detailed understanding of product/process sustainability.

XOR Neural Networks

Apr 2022 – Apr 2022

**Tech Stack:** Python, NNs

- This project involves the development of a single-layer perceptron and a multi-layer perceptron (MLP) to understand and predict XOR logic. Both models are trained on the training data and tested on the test data. The performance and decision boundaries of the models can be visualized.

AHP Operation Research

Oct 2019 – Feb 2020

**Tech Stack:** Python, Numpy, xlrd, Multi-criteria decision making, TOPSIS, WSM, AHP

- Implemented the Analytical Hierarchy Process (AHP) and other decision-making methodologies (WSM, TOPSIS) in Python to analyze and rank electricity generation technologies based on various sustainability criteria for optimal decision-making in operations research.

Renewable Energy Market Value Analysis

Apr 2019 – Jul 2019

**Tech Stack:** Python, NumPy, Pandas, Matplotlib, Scikit-learn, Energy market value

- A model was created to analyze the market value of wind and solar power in various electricity markets, including Germany, France, and Sweden. Python was used to develop the model and visualize the generated data.