Yu-Sheng (Adam) Tang

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# Education

## Graduation capUniversity of Freiburg MarkerGermany Oct 2018 - Feb 2021

## Master of Science in Sustainable Systems Engineering German Grade: 1.7, GPA: 3.6/4.0

## Graduation capChang Gung University MarkerTaiwan 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, Pytest, Bootstrap

**Data Skills**: ETL pipeline, RESTful API, JWT, data wrangling, web scraper, web crawling, data warehousing, DevOps

**Tools & Techs**: pip, Git, CI/CD (GitHub, GitLab), Jenkins, Docker, uWSGI, NGINX, Data Space, AWS

**Management**: Jira (admin, maintainer), project management, agile management, requirement engineering

**Certificate**: IBM Data Science Professional Certificate,  
International Requirement Engineering

# Experience

## Briefcase Data Engineer & Scientist | Building[Fraunhofer EMI | MarkerGermany](https://www.emi.fraunhofer.de/en/business-units/automotive/digital-engineering.html) Oct 2021 - Present

## Technical Skills:

* Designed an ontology for over 2000 datasets and built a **knowledge graph** for material life cycle assessment (**LCA**) of additive manufacturing processes by using **Python** and **SPARQL**, enhancing data pipeline, analysis, and query capabilities.
* Designed a resilience data space infrastructure and architecture for the resilience assessment of city(s); established and implemented project-specific data space components.
* Constructed an efficient **ETL** data pipeline in **Python**, significantly enhancing the efficiency.
* Bridged multiple database **APIs** to feed a data lake and implemented advanced data parsing techniques using Python.
* Established a **Python package** (**Pypi**) and **APIs (RESTful)** to streamline data processing, enhancing productivity and code reusability.
* Implemented **DevOps** and **CI/CD** pipeline for automated testing, release, and deployment, enhancing code quality and project efficiency.
* Deployed and integrated a large language models (**LLMs**), Llama 2, using **Docker** and **Flask** into the data pipeline.

## Project Management:

* Supervised a master's student, providing guidance throughout the course of the project– *Designing An Automated Metadata Extraction Pipeline: Bridging the Gap Between Data Collection and Unified Graph-Based Metadata Representation*.
* Supervised students in establishing an **ETL pipeline** for a comprehensive metadata graph that describes heterogeneous data from various sources.
* Developed a universal **use-case** guideline and template, significantly enhancing the efficiency and quality of software development processes within the HERAKLION project.
* Managed requirements (**requirement engineering**), **agile project management** cycle, and project execution for a team of more than 20 people by using **Jira**, streamlining workflows and improving efficiency.

## Briefcase Mechanical Engineer | Building[Fraunhofer EMI | MarkerGermany](https://www.emi.fraunhofer.de/en/business-units/automotive/digital-engineering.html) May 2020 - Sep 2021

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

## Briefcase Mechanical Engineer | Building[INATECH | MarkerGermany](https://www.emi.fraunhofer.de/en/business-units/automotive/digital-engineering.html) 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 of cyclic stress loading, leveraging **Python** for the optimized control of stepper motors based on signal frequency, speed, gear ratio, and analyzed simulated results and developed data visualizations with Python.

# Projects

## [HERAKLION](https://www.emi.fraunhofer.de/en/business-units/automotive/digital-engineering.html) - Heuristic Resilience Analyses for Municipalities Using Data Space Functionalities Mar 2022 - Present

***Tech Stack: pip, git, CI/CD, DevOps, ETL, RESTFul API, Python, py-library, Flask, Docker, 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, data structure, 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.