JOHAN TJUATJA

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PROFILE

Seasoned software engineer with six years of proven experience building secure, scalable systems in agile environments. Expert in Python, test automation and data visualization, with hands-on experience in full-stack web application, ETL pipeline and AI agent development.

EXPERIENCE

Senior Software Test Automation Engineer, Dyson — Apr 2023 – Present

Responsibilities:

- Spearhead initiatives to improve overall efficiency of test activities across Software Test and QA department.

- Deliver software solutions to aid software testers and QA engineers in their daily tasks.

- Be the key maintainers of Python-based in-house test automation and task parallelization frameworks.

- Maintain test automation framework usage data collection and visualization pipelines.

Achievements:

- Developed an MCP-inspired tool using our task parallelization framework to facilitate engineers-led AI tool and agent development.

- Developed a skillset tracking web application using Vue.js, Flask and MySQL to help Software Test and QA engineers and managers to keep track of different teams' skillset profiles. Utilised Microsoft's SSO SAML protocol for authentication to secure the application while maintaining its ease-of-use.

- Developed an AI-powered escape defect tickets analyzer web application using htmx, Flask and Ollama to help test engineers with early stage defects validation.

- Developed a high-performance remote access web application for test rigs with htmx, Flask and MySQL, engaging cross-geography teams for prototype validation and roll-out. Focused on security, latency, and scalability under demanding test conditions.

- Provided L3 support, troubleshooting critical test-run issues and minimizing down-time for continuous regression testing infrastructure.

Software Test Automation Engineer, Dyson — Sep 2020 – Apr 2023
Responsibilities:

- Deliver software solutions to aid software testers with test case automation.

- Be one of the key maintainers of Python-based in-house test automation framework.

- Develop and maintain test automation framework usage data collection and visualization pipelines.

Achievements:

- Developed a task parallelization framework using Python, ZMQ, and Flask, making robust test parallelization feasible and improving test execution performance by 30% as a result.

- Built ETL pipelines and dashboards using Grafana, Dash, Plotly, and Pandas to visualize test performance and bottlenecks across global testing operations.

- Maintained 90%+ coverage through unit/integration tests using TDD/BDD, ensuring delivery of stable and reliable software.

- Collaborated in an Agile environment to deliver new automation features, including PyQt5 GUI enhancements for test automation framework.

Graduate Software Engineer, Dyson — Sep 2019 – Sep 2020
Responsibilities:

- Deliver software solutions to aid software testers with test case automation.

- Help to maintain in-house Python-based test automation framework.

Achievements:

- Developed embedded C/C++ and Python-based simulators for optical sensors, BLDC motors, and battery systems, enabling validation of hardware behavior in software test harnesses.

- Contributed to optimization works that reduced test simulation runtime by 25%.

- Participated in collaborative debugging sessions, resolving automation defects across test areas.

- Delivered integration between in-house Java-based test framework and in-house Python-based test automation framework by writing adapters in both Java and Python.

Software Test Automation Intern, Dyson — Jun 2018 – Aug 2018
- Built proof-of-concept robotics simulation using ROS/Gazebo, controlling robots programmatically via URDF-based models.

- Demonstrated real-time robot control feasibility, supporting potential future automation adoption.

EDUCATION
Nanyang Technological University (NTU), Singapore — Bachelor's Degree in Mechanical Engineering (with Minor in Computing) (1st Class Honours), 2019
- Relevant Coursework: Object Oriented Design and Programming, Algorithm & Data Structures, Realtime Software for Mechatronics Systems

- Award: ASEAN Undergraduate Scholarship

CORE COMPETENCIES
- **Programming & Scripting:** Python, TypeScript, Embedded C/C++, Java

- **Data Engineering & Processing:** SQL (MySQL, SQLite), Pandas, NumPy, SQLAlchemy, Parquet, Pyarrow

- **Web Frameworks:** Flask, FastAPI, Django, React (Remix), Vue.js

- **DevOps & Cloud:** Docker, Jenkins, Bamboo, Cloudfront, S3, Lambda, SQS

- **Data Visualization:** Grafana, Matplotlib, Seaborn

- **Development Methodologies:** Agile (Scrum), TDD, BDD

- **AI:** MCP, Langchain

- **Other Tools:** Git, Bitbucket, JIRA, NGINX, ZMQ, Pydantic

PROJECTS

Strata

- Developed a simple, convenient backtesting web app that supports running Python in-browser and provides users access to historical OHLCV data, with varying frequencies and a quick way to display strategy performances.

- Technologies used include Remix + Pyodide (Frontend) and FastAPI + Pyarrow (Backend).

Jaiger

- Worked on an experimental project as an effort to solidify my understanding of the underlying mechanism of the Model Context Protocol (MCP) that enables the development of LLM-compatible tools.

- Jaiger is a framework for developing AI-powered applications, which provides a standardised interface for AI tools that makes it easier for AI tools developer to develop their tools and AI application developers to integrate AI tools into their AI applications.

CSS and HTML DSL for Python (Chope)

- Created a Python package for defining HTML as a Python data structure, focusing on usability and readability.

- Variable(s) can be embedded into data structure, allowing for programmatic value(s) substitution during runtime, similar to Jinja and Django template.

Python Messaging Application

- Built a toy project that serves as an experiment and a showcase of the capabilities of the htmx framework to build interactive applications.

- The entire application was written purely in Python, powered by Flask, SQLite and Chope (with htmx).

- Utilised websocket technology to facilitate pushing updates (e.g. new messages) from server.ADDITIONAL INFORMATION

REFERENCES

Available upon request.