

# Phaedra Tan

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## Data Scientist | Cybersecurity Enthusiast

Data Scientist with a background in Computer Science, currently developing in-house risk models for MOM. My work centers on two areas: predictive modeling for risk sensemaking and deploying NLP pipelines in secure, air-gapped infrastructure. I understand the constraints of government systems and how to build effective AI solutions that function within them.

### WORK EXPERIENCE

#### **Ministry of Manpower (MOM)** **04/2025 - Present** **Statistical Specialist (Manpower Research and Statistics Department)** **Singapore**

- Co-architected and deployed a full-stack automated analysis tool using Streamlit and OpenAI, reducing manual job breakdown time by converting complex job specifications into standardized, analyzeable task units.
- Fine-tuned and deployed local LLMs within air-gapped environments
- Automated LLM-based tool that analyses sensitive audit reports and uses NLP to extract and summarize key information.
- Engineered complex risk indicators by synthesizing disparate datasets to identify behavioral proxies for organizational risk, supporting proactive governance and anomaly detection.
- Executed rigorous data preprocessing workflows using Pandas to handle missing values, outliers, and inconsistencies across demographic data records (e.g., payroll, utility data), ensuring high-fidelity inputs for downstream modeling.

#### **WS Audiology (WSA)** **Singapore** **Cybersecurity Intern**

Focused on Risk Management and Governance.

- Executed vendor security assessments
- Compiled data for the organizational Risk Register
- Conducted Business Impact Assessments

### EDUCATION

#### **Bachelor of Computing (Major in Computer Science)** 12/2024 National University of Singapore (NUS)

Relevant Coursework: Database Management, Python, Statistical Analysis, Big Data Systems.

#### **GCSE A Level** Raffles Institution (JC)

### CERTIFICATIONS

#### **Introduction to Network Analysis** 01/2026 - Present Security Blue Team

#### **Certified in Cybersecurity (CC) Coursework** 02/2026 - 01/2029 ISC2

#### **Statistical Learning with Python** 01/2024 Stanford University (EDX)

### AWARDS & SCHOLARSHIPS

#### **National Team Athlete (Shooting)**

## PROJECTS

### HR Alchemist: Job Fractionalisation

MOM

Co-developed a full-stack analytical engine that transforms dense, unstructured job specifications into granular, standardized task units. By breaking down roles into their foundational components, it enables organizations to move away from rigid job titles and toward a more fluid, task-based understanding of their workforce.

#### Core Functionality

- Converts complex job specifications into standardized, granular units to facilitate objective workforce analysis.
- Utilizes vector-based similarity algorithms to map internal role descriptions against broader industry benchmarks and external datasets.
- Employs RAG architecture to ensure outputs remain consistent with specific organizational policies and localized labor market conditions.
- Projects abstract role requirements into a high-dimensional vector space to identify specific, measurable skill sets.

A lite version of the project is deployed on my portfolio page ([portfoliopaedrat.com](https://portfoliopaedrat.com))

### Kamui: Phishing Triage Tool

01/2026 - Present

Personal

Developed a specialized forensic tool to automate Level 1 analysis of suspicious email artifacts (.eml) that is specifically optimized for BTLO Phishing Analysis and CyberDefenders Phishstrike labs. The system recursively deconstructs nested email structures to isolate indicators of compromise (IOCs), reconstruct delivery paths from raw headers, and generate dynamic threat scores. To ensure analyst safety, the tool utilizes memory-only processing and automated URL defanging to prevent accidental malware execution. A report is generated at the end for

To support incident closure, Kamui generates a PDF report summarizing technical findings to facilitate defensive actions and policy remediation.

This project is testable on my portfolio page ([portfoliopaedrat.com](https://portfoliopaedrat.com)).

### Predictive Modelling for Firm Insolvency

MOM

- Integrates non-traditional operational signals to identify early-stage financial distress, surfacing risks that remain invisible to conventional solvency reporting.
- Employs exploratory modelling to assess the reliability of various data streams, ensuring the long-term viability and accuracy of the model for high-stakes intervention.
- Converts complex model outputs into standardized "early warning" signals, enabling governmental intervention prior to terminal insolvency.

## SKILLS

**AI & Machine Learning:** Large Language Models (OpenAI, Qwen, Phi), Prompt Engineering, RAG, Vector Embeddings

**Languages:** CSS, HTML, JavaScript, Python, SQL

**Data Analysis & Big Data:** Apache Spark, Hadoop, Matplotlib, Pandas, Power BI

**Web Development:** Firebase, Material-UI, Node.js, React, Streamlit

**Soft Skills:** Adaptability, Critical Thinking, Stakeholder Management, Technical Communication