# Toka Ayman Rashed

## Machine Learning Engineer

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## PROFILE

**Artificial Intelligence/Machine Learning Engineer** with hands-on experience in Natural Language Processing and real-time systems, including fine-tuning models like Whisper and BERT for real-world impact. I break down complex problems into intuitive systems. Leading my robotics competition team and collaborating on projects has taught me that the best solutions come from deep listening, steady iteration, and balancing logic with empathy.

## EDUCATION

### AI/ML Trainee

ITI 9-month Professional Diploma in Artificial Intelligence and Machine Learning Track          Oct 2024 – present
Alexandria branch

### BEng in Computer Engineering – Graduated with Honors – GPA: **3.64**

Arab Academy for Science and Technology                                                        Sept 2019 - Jul 2024

- **Graduation project –** grade: **A+**
  Designed and built a fully automated system that transcribes doctor-recorded audio using fine-tuned *Whisper AI* and extracts key medical entities with a custom *BERT NER* model—achieving up to 99% precision. Created and labeled both datasets manually, enabling the system to store structured diagnoses and medications in a medical database. Integrated *Whisper Mic* and *Argos* Translate for real-time, multilingual doctor–patient communication.

## PROJECTS

### Interactive Gesture Maze Game                                                              Jun 2025

- Extended and customized my Real-Time Hand Gesture Recognition System to create a production-ready web game using hand-gesture controls (97.6% accuracy).
- Built an end-to-end MLOps pipeline with Docker, MLflow, FastAPI, and real-time monitoring (Prometheus/Grafana).

### Social Media Addiction Analytics Dashboard                                                 May 2025

- Designed and deployed a comprehensive Power BI dashboard to analyze social media addiction metrics, including addiction scores, daily usage, sleep patterns and academic performance correlations.
- Created interactive visuals (maps, line charts, bar graphs, pie charts) and DAX measures to enable dynamic filtering by geography, age, gender, and academic level.

### Customer Churn Dashboard                                                                   May 2025

- Developed an end-to-end interactive Plotly dashboard powered by a Gradient Boosting model to pinpoint key churn drivers—user inactivity, age, and balance—and deliver actionable insights in real time.

### Credit Card Customer Segmentation
May 2025

- Built a full customer segmentation pipeline using Python, pandas, scikit-learn, PCA, UMAP, DBSCAN, GMM, and K-Means. Applied advanced transformations (log + Box-Cox), standardized the data, and used Plotly for interactive cluster visualizations. K-Means with UMAP gave the best performance, revealing 6 distinct customer profiles for targeted marketing.

### Real-Time Hand Gesture Recognition System
Mar 2025

- Built a real-time hand gesture recognition system using MediaPipe and OpenCV, achieving 97.39% accuracy across 18 gestures through advanced feature engineering and optimized ML models.

### Job Market Analysis
Mar 2025

- Scraped and analyzed **8,000**+ job postings from Wuzzuf using Python (Selenium, BeautifulSoup) to uncover hiring trends, salary insights, and in-demand skills. Visualized key findings using Matplotlib and Seaborn.

### Predictive Modeling
Oct 2023

- **Spaceship Titanic (Kaggle)**
  80% accuracy using Random Forest/XGBoost after advanced preprocessing.
- **Airline Passenger Prediction**
  Modeled 129K records with Random Forest/XGBoost; reached 96% accuracy.

## SKILLS

- **Programming & Scripting:** Python (Pandas, NumPy, PySpark, Scikit-learn, RandomizedSearchCV), C/C++, SQL, Bash
- **Machine Learning & Deep Learning:** TensorFlow, PyTorch, Keras, Hugging Face, Scikit-surprise, model optimization (Random Search, Grid Search)
- **Time Series & Forecasting:** Time Series Analysis, SARIMAX, ARIMA, Holt-Winters, Exponential Smoothing, ACF/PACF, Auto ARIMA, Naive Forecasts
- **Big Data & Processing:** Apache Spark (PySpark), Hadoop, Hive
- **Data Analysis & Visualization:** Exploratory Data Analysis, Feature Engineering, Statistical Modeling, Matplotlib, Seaborn, Plotly, Dash, Power BI
- **NLP & Computer Vision:** Whisper, BERT NER, Tokenization, TF-IDF, Word2Vec, Contextual Embeddings, Text Classification, Named Entity Recognition, MediaPipe, OpenCV
- **MLOps & Deployment:** Docker, FastAPI, MLflow, CI/CD (GitHub Actions), Uvicorn, Prometheus, Grafana, Locust
- **Databases & Cloud:** SQL, NoSQL (MongoDB), AWS Foundations, Linux, Conda/venv
- **Tools & Methodologies:** Git, Agile, Jupyter Notebooks, version control, continuous integration

## COURSES

- Graduate Diploma in ML and AI (95%) – Amit Learning
- AWS Cloud Foundations Badge
- Pandas Data Analysis Badge (Kaggle)
- Database Fundamentals (SQL & NoSQL) Certificates
- Certificate Of Completion of Effective Listening Course

## AWARDS

- IEEE WIE Young Women Recognition Award – MATE Egypt ROV Regionals 2023
- 3rd Place in the US MATE EGYPT ROV World Championship 2023 Competition
- 19th Place – ECPC 2023 Qualifications (Qualified for ECPC finals)

## LANGUAGES

- Arabic – native
- English – fluent
- French – Beginner