Minh Duc Pham

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Education

University of Pisa **Jul. 2026**
Master in Data Science and Business Informatics *Pisa, Italy*

University of Trieste & OWL University of Applied Sciences and Arts **Mar. 2022**
Double Degree Master in Production Engineering and Management *Pordenone, Italy & Lemgo, Germany*

HCMC University of Technology and Engineering **Sep. 2018**
Bachelor in Industrial Management *Hochiminh City, Vietnam*

Academic Specializations

- Combinatorial Optimization
- Continuous Optimization
- Stochastic Optimization
- Machine Learning
- Decision Support System
- Supply Chain Analytics
- Operation Excellence
- Lean & 6 Sigma

Experience

Weave Services Limited **Jun. 2022 – Aug. 2023**
Business Analyst *Hong Kong (Remote)*

- Developed an automated production scheduling engine, solving large-scale Integer Programming models (200+ SKUs) to optimize mold allocation and machine capacity across shifts.
- Built and applied MIP-based optimization models to enhance multi-constraint capacity planning, aligning production schedules with operator productivity.
- Conducted end-to-end data analysis (SQL, ERP, manual logs) and on-site field studies to identify root causes and deliver data-driven "Quick Win" improvements.
- Delivered comprehensive diagnostic reports and business case presentations for C-level executives, translating complex operational challenges into ROI-driven transformation roadmaps.
- Managed ad-hoc ETL and data pre-processing workflows to clean and standardize raw operational data, ensuring high quality inputs for predictive analytics and diagnostic reporting.

Spatronics Vietnam **Feb. 2021 – May. 2022**
Production Engineer *Binhduong, Vietnam*

- Built end-to-end ETL pipelines to automate data collection and processing for new product lines. Developed real-time BI dashboards to drive executive decision-making.
- Performed Exploratory Data Analysis (EDA) on production datasets. Delivered actionable insights to support management in tactical decision-making and problem-solving.
- Designed and built the SMT changeover process for two high-volume PCBA products, reduced setup time by 50% and increased OEE to 82%.
- Developed a project that increased the First Pass Yield of Box Build products (21 SKUs) on the Tele-radio line to 98.89%, increased 4.09 sigma level, saved $35k in 2022 for the company.

Coherent Corp. **Dec. 2017 – Sep. 2019**
Production Engineer *Binhduong, Vietnam*

- Monitored, analyzed daily data regarding to business goals and took corrective/preventive actions to get them back on track.
- Made weekly/daily production schedules (200 SKUs) based on master production plans with the right time, quantity, conditions.
- Failure analysis by applying lean tools (5 whys, 5W1H, 5M1E, FMEA), mathematics techniques (6 Sigma, Reliability analysis, Pareto/SPC analysis, Cpk/Ppk, DOE) to define corrective/preventive actions regarding to quality excursions
- Developed a productivity improvement process for a Core-Bedding product (single SKU), reducing average labor time from 0.38 to 0.23 hours per unit and saving $9,229.29 for the company.

HCMC University of Technology and Engineering **Sep. 2016 – Dec. 2016**
Teaching Assistant *Hochiminh City, Vietnam*

- Taught and guided students in Mathematical Programming course, covering LP formulation and solution methods (Simplex, Graphical), optimization problems (Capacitated Facility Location Problem, Resource Allocation Problem), and project scheduling techniques (CPM, Gantt).

Projects

Flight Delay Analysis and Prediction | *Python, PySpark* **Mar. 2026**

- Processed a 2M-record aviation dataset using PySpark to identify key delay factors across 380 U.S. routes.
- Performed EDA, Outlier Detection, and Feature Engineering to optimize data quality and model inputs.
- Developed predictive models using Linear/Logistic Regression and Random Forest, plus K-Means for pattern discovery.
- Delivered actionable insights to improve airline operational scheduling and delay mitigation strategies.

Implementation of Interior-Point Method for SVM Optimization | *MATLAB* **Jul. 2025**

- Implemented Primal-Dual Interior-Point algorithms to solve large-scale Quadratic Programming problems for Binary and Multi-class SVM.
- Developed custom solvers based on Ferris & Munson (2003) and Gondzio (2011) frameworks to optimize efficiency.
- Benchmarked solver performance against MATLAB's quadprog, achieving high robustness and successful convergence.

Data Warehouse & ETL Pipeline for Chicago Traffic Crashes | *SQL, SSIS, MDX, Power BI* **Jan. 2025**

- Designed and implemented a complete ETL pipeline using SSIS to integrate large-scale traffic data into a Data Warehouse.
- Developed a multi-dimensional OLAP cube (MOLAP) with complex hierarchies, utilizing MDX for analytical querying.
- Built interactive Power BI dashboards to visualize crash patterns and provide insights for urban traffic improvements.

Adjusting Classifiers to New A Priori Probabilities | *R* **Sep. 2024**

- Reproduced the EM-based procedure from Saerens et al. (2002) to adjust classifier probabilities under dataset shift.
- Implemented an automated framework in R to estimate unknown class priors and update classifier outputs, improving accuracy on non-stationary datasets

Advanced Data Mining on Spotify Dataset | *Python* **Jul. 2024**

- Developed a pipeline for 100k+ Spotify records, integrating Time Series Analysis (DTW, CNN/RNN) and tabular mining.
- Handled data quality issues using anomaly detection techniques (Isolation Forest, LOF, HBOS, etc.) and addressed class imbalance with resampling methods such as SMOTE, ADASYN, ENN, etc.
- Optimized diverse models, including Ensembles (XGBoost, AdaBoost) and Neural Networks, to achieve high classification accuracy.
- Used Explainable AI (SHAP, LIME) to interpret model decisions and identify key features for classification.

Technical Skills

Programming: Python, C++, AMPL, SQL, R, LaTex
Modelling Systems: PuLP (Python), Pyomo (Python), SMS++ (C++)
Solvers: CPLEX, Gurobi, HiGHS, COIN-OR CBC
Machine Learning / Deep Learning: PyTorch, TensorFlow, Scikit-learn
Big Data: PySpark
Data Visualization: Microsoft Power BI

Online Courses & Certifications

Certified in Planning and Inventory Management (CPIM) | *APICS* **Sep. 2023**
Six Sigma Green Belt Specialization | *The University System of Georgia, Coursera* **Jan. 2023**
Analytics for Decision Making Specialization | *University of Minnesota, Coursera* **Jan. 2022**
Supply Chain Management Specialization | *Rutgers Business School, Coursera* **Nov. 2020**
Project Management Principles and Practices | *UC Irvine, Coursera* **Oct. 2020**